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OCEANOGRAPHIC DATA FROM NORTHWEST GREENLAND SEA: ARCTIC EAST 19--ETC(U)

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OCEANOGRAPHIC DATA FROM NORTHWEST GREENLAND SEA:

ARCTIC EAST 1979 SURVEY OF THE

USCGC WESTWIND.

(9) Rept. for 15 Aug-30 Sep 79,

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1. INTRODUCTION

This report presents the data and briefly describes some preliminary oceanographic results of the cruise of the USCGC WESTWIND to the Northwest Greenland Sea during the period 15 August to 30 September 1979. The primary objectives of the field program were to collect bathymetric, physical oceanographic and acoustic data in selected areas of the continental shelf of eastern Greenland between 76°N and 82°N. Temperature, salinity, sound speed, and sigma-T data obtained with a profiling Conductivity-Temperature-Depth (CTD) Unit are presented here; acoustic and bathymetric results will be reported separately.

2. CRUISE DESCRIPTION

2.1 General

The scientific party boarded the USCGC WESTWIND in Reykjavik, Iceland on 14 August 1979. Included in the scientific group were:

Dr. John L. Newton, Science Applications, Inc., La Jolla, CA Chief Scientist

Mr. Lee Piper, Science Applications, Inc., Seattle, WA

Lt. Dan Duddy, USN, TAD Arctic Submarine Laboratory, Naval Ocean Systems Center, San Diego, CA

Mr. Mike Welch, Applied Physics Laboratory, University of Washington, Seattle, WA

Mr. Robert Perry, Naval Research Laboratory, Washington, D.C.

Dr.George Geillis, Naval Research Laboratory, Washington, D.C.

The ship departed Reykjavik on the evening of 15 August and arrived at about 77^{O}N, 00^{O}W on the afternoon of 19 August and commenced the scientific operations. The scientific program was concluded on 25 September and the scientific party was disembarked at Reykjavik on 30 September.

2.2 Areas of Operation

To indicate the general areas of operation the cruise track is sketched in Figure 1 with the 0000Z positions labeled daily. The names and locations of geographic features are indicated in Figure 4. A brief summary of the scientific operations follows:

19 - 20 August 1979: Completed an east to west cross section of nine stations with approximately 15 km spacing across the Polar Front in the vicinity of 79^{O}N.

21 - 27 August 1979: Conducted CTD/bathymetric survey south of Ob Bank, working from seaward northwest toward Ingolfs Fjord along a zig-zag path.

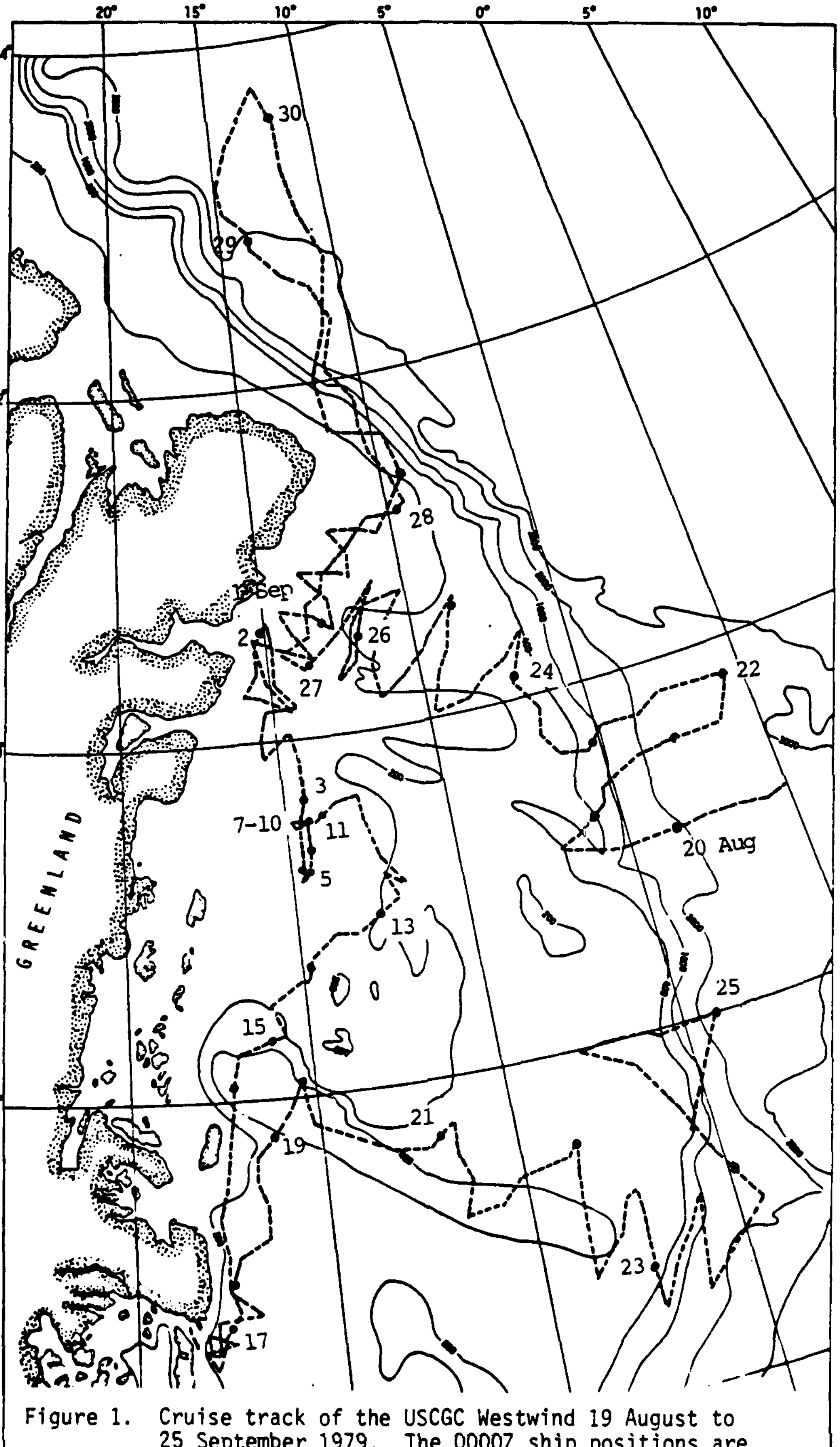

Figure 1. Cruise track of the USCGC Westwind 19 August to 25 September 1979. The 0000Z ship positions are indicated daily.

28 - 30 August 1979: Ship proceeded north to vicinity of 83°-45'N, 12°-20'W. CTD casts were taken every 15-25 km.

31 August - 2 Sept 1979: Continued CTD/bathymeric survey south and west of Ob Bank.

3 - 4 September 1979: Moved south to conduct survey in the region west of Belgica Bank.

5 - 11 September 1979: Because heavy, fast ice precluded ship penetration into the near-shore area, CTD/bathymetric measurements were commenced using the helicopters. On 5 September, after two stations, a tail rotor linkage broke on one helicopter while it was on the ice 26 miles from the ship. Scientific operations were reduced to a minimum level while the ship moved to within 12 miles of the downed helicopter to begin repairs. Parts were airdropped by a Coast Guard C-130 on 8 September. The helicopter was repaired, brought back on board and was ready for operations on 11 September.

12 - 15 September 1979: Resumed survey of areas west of Belgica Bank and Belgica Dyb. Made extensive use of the helicopters to take CTD/bathymetric data in near-shore fast ice areas.

16 - 18 September 1979: Moved south, conducted CTD/bathymetric survey off Germania Land and Store Koldewey.

20 - 23 September 1979: Survey of Belgica Dyb along zig-zag path southeast toward the continental slope.

24 - 25 September 1979: Completed section of six stations across the Polar Front at about 78°N. Terminated scientific operations.

2.3 Weather Conditions

The weather conditions encountered during the cruise are graphically presented in Figure 2, and provide a plot of surface pressure, wind speed and direction, air temperature and visibility, taken from the WESTWIND's routine six-hourly weather observations. These parameters are plotted versus time as a convenience, even though they do not represent a true time series at a fixed point. The weather conditions during the cruise are summarized in Tables I through III.

During the portion of the cruise within the survey area (18 August through 26 September 1979), air temperatures ranged from -13^{o}C to +7^{o}C. Most observations fell between -5^{o}C and +2.5^{o}C with an average air temperature of -1^{o}C. Visibility was generally poor, with ranges less than 2 n. mi. nearly half of the time, and less than 5 n. mi. for 75% of the cruise. Winds were typically light, less than 15 kts, and predominantly from the north or northeast.

During the initial portions of the cruise, while the ship was working southeast of Ingolfs Fjord, winds were from the southwest with speeds decreasing from 20-25 kts to about 0 kts. Air temperatures decreased from about +5^{o}C near the ice edge to around 0^{o}C as the ship moved into the ice pack. Visibility was generally poor in fog and snow. Following the "northing" on 28-30 August, while the ship operated in the vicinity of Belgica Bank (until about 15 September), the wind became predominantly from the north and air temperatures decreased to about -10^{o}C. Visibility was generally better during this portion of the cruise.

Weather conditions during the last half of the cruise were dominated by the passage of three low pressure areas (10 September 19 September, and 26 September). Winds increased to in excess of 30 kts, from the north/northeast on each occasion. The latter two storms were associated with significant amounts of snow and poor visibility.

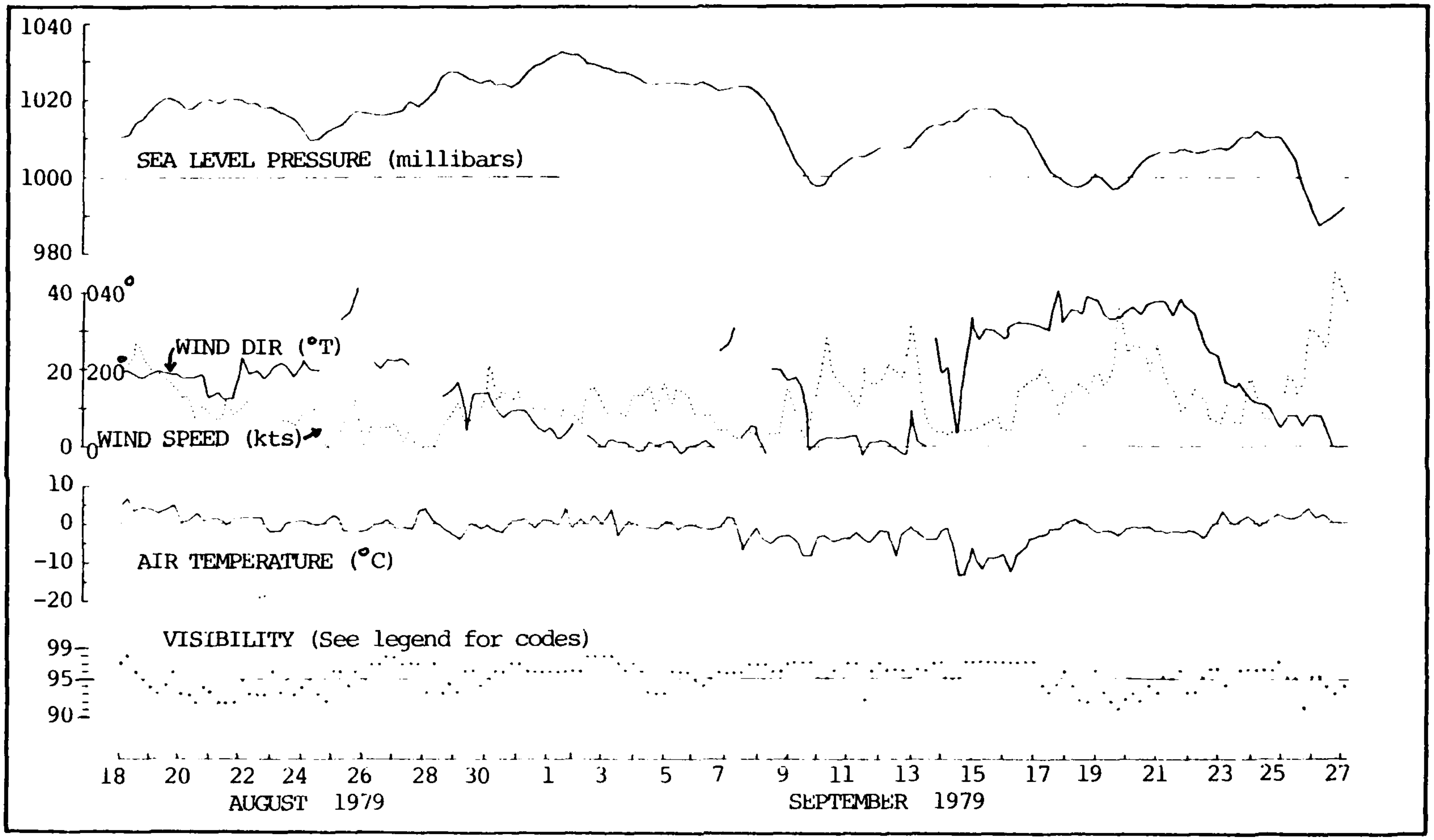

Figure 2. Weather conditions plotted versus time based on WESTWIND routine six-hourly observations. Visibility codes: 90 = 50 yds.; 91 = 50 to 200 yds.; 92 = 200 yds. to 1/4 n. mi.; 93 = 1/4 to 1/2 n. mi.; 94 = 1/2 to 1 n. mi.; 95 = 1 to 2 n. mi.; 96 = 2 to 5 n. mi.; 97 = 5 to 10 n. mi.; 98 = 10 to 25 n. mi.; 99 = > 25 n. mi.

TABLE I. Summary of air temperatures (^{o}C); 18 August - 26 September 1979. (160 observations at six-hour intervals).

INTERVAL	-15 to -12.5	-12.5 to -10	-10 to -7.5	-7.5 to -5	-5 to -2.5	-2.5 to 0	0 to 2.5	2.5 to 5	5 to 7.5
% WITHIN INTERVAL	1.2	1.3	3.8	1.9	15.7	35.2	32.1	6.9	1.9
CUMULATIVE %	1.2	2.5	6.3	8.2	23.9	59.1	91.2	98.1	100.0

TABLE II. Summary of visibility conditions (yds or n. mi.); 18 August - 26 September 1979. (160 observations at six-hour intervals).

INTERVAL	50 to 200 yds.	200 yds. to ¼ n. mi.	¼ to ½ n. mi.	½ to 1 n. mi.	1 to 2 n. mi.	2 to 5 n. mi.	5 to 10 n. mi.	10 to 25 n. mi.
% WITHIN INTERVAL	1.3	6.9	14.5	9.4	13.2	28.9	21.4	4.4
CUMULATIVE %	1.3	8.2	22.7	32.1	45.3	74.2	95.6	100.0

TABLE III. Summary of wind speed (kts.) and direction (^{o}T); 18 August - 26 September 1979 (Observations at six-hour intervals).

SPEED (KTS) DIRECTION (^{o}T)	0 to 5 kts.	5 to 10 kts.	10 to 15 kts.	15 to 20 kts.	20 to 25 kts.	25 to 30 kts.	30 to 35 kts.	35 to 40 kts.	> 40 kts.	%
180 (±22½^{o}T)	3.1	4.4	6.3	1.9	3.1	0.6				19.4
225	1.3	3.8	1.3							6.4
270	1.9	2.5	0.6							5.0
315	1.9	1.3	0.6	3.1	0.6			0.6		8.1
000	1.3	6.9	4.4	11.3	2.5	2.5		0.6	0.6	30.1
045	2.5	3.1	3.8	1.3		0.6				11.3
090		1.9	3.1	1.3		0.6	1.3			8.2
135	0.6	4.4	1.3	0.6	0.6					7.5
%	12.6	28.3	21.4	19.5	6.8	4.3	1.3	1.2	0.6	

2.4 Ice Conditions

Figure 3 depicts the general ice conditions encountered during the survey. The ice edge position, taken from the NAVY-NOAA Joint Ice Center analysis for 21 August, 28 August, 4 September and 11 September 1979, tended to parallel the continental slope. Pack ice concentrations over the continental shelf ranged from a low of about 1 okta to more than 7 oktas at times. The ice concentration tended to be somewhat lighter north of Belgica Bank off Ingolfs Fjord, than to the south of Belgica Bank. Fairly light ice was encountered north of Ob Bank during the northward transit to the vicinity of 83°-45'N.

A series of helicopter flights were conducted during 12-15 September to collect bathymetric and oceanographic data in the near-shore area between 78° and 80°N. A long continuous lead was observed paralleling the coastline. The ice shoreward of this lead appeared to be relatively stationary (sketched as Fast Ice in Figure 3) having a continuous, nearly flat surface, with little evidence of active ridging. The seaward edge of the ice sheet was somewhat deformed and thicker than a nine foot drill string could penetrate. Ice thickness generally decreased shoreward with one drill site near the islands northwest of the Ille de France showing less than three feet of ice.

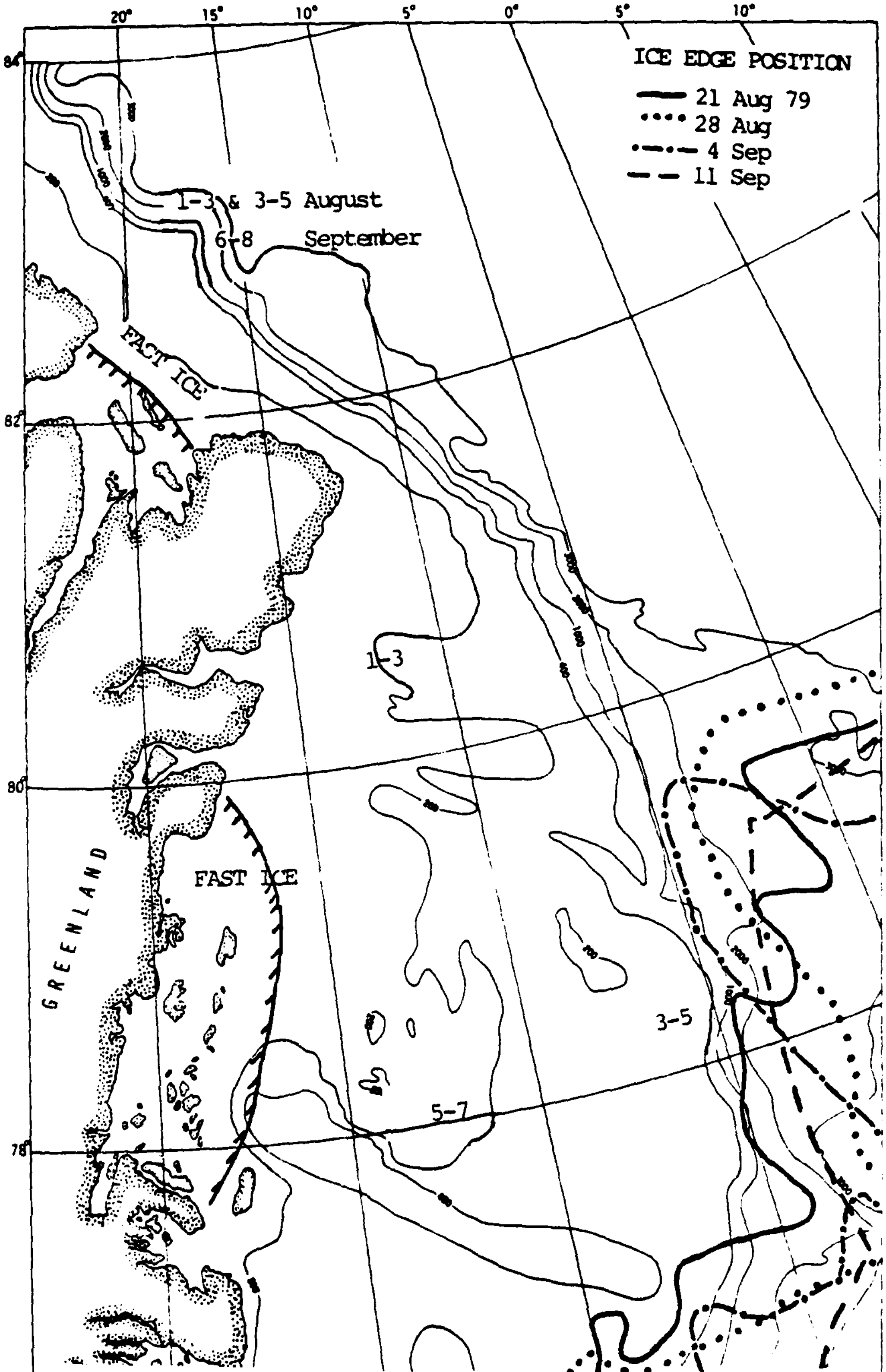

Figure 3. Ice conditions during the cruise. Concentrations are given in oktas. Ice edge locations are from NAVY-NOAA Joint Ice Center Analyses for 21 August, 28 August, 4 September and 11 September 1979. The Fast Ice between 78°N and 80°N is sketched from ship and helicoptor observations.

3. PHYSICAL OCEANOGRAPHIC MEASUREMENTS

3.1 Methods

CTD profiles were taken with the Lightweight Profiler (LP) system that was developed by the Applied Physics Laboratory of the University of Washington. A more detailed description is contained in Reference 1. The LP is a portable, self-contained system which records conductivity, temperature, and depth data digitally on magnetic tape cassettes which are later processed to compute temperature and salinity as a function of depth. A lowering rate of about 1 m sec $^{-1}$ was utilized resulting in 2 to 3 samples per meter.

Two configurations of the LP were employed during the cruise. For shipboard use, a unit with 600 m of cable was installed in the oceanographic laboratory. A small drum driven by an electric motor provided a power assist for hand winching the cable in and out and maintained a steady 1 m sec $^{-1}$ drop and raise rate. Nansen bottles with reversing thermometers were periodically utilized to obtain salinity samples and measure temperature as a check on the LP system operation. The second configuration, for use with the helicopters, was a portable, hand-cranked unit capable of depths to about 200 m. This unit was deployed either from the helicopter as it hovered over open water or by landing on the ice, drilling a hole and lowering the sensor package from the parked helicopter.

Preliminary profiles of temperature and salinity versus depth and temperature versus salinity plots were produced onboard just after each cast utilizing a Hewlett-Packard 9100 series computer/plotter system. These preliminary plots provided a check on the data quality and equipment operation and allowed some initial onboard analysis.

Following the cruise the data was transferred from the cassettes to a seven track tape by the Applied Physics Laboratory of the University of Washington. The data was edited to remove erroneous points. Necessary depth,

temperature and salinity calibrations were applied, and then a preliminary despiking routine was run to remove spurious salinity spikes.

3.2 Navigation

The majority of the navigational information came from a Magnavox MX 1107 Satellite Navigation System installed on WESTWIND just prior to her departure for the cruise. An average of 40 fixes were received each day of which about 3/4 were within the parameters necessary to be considered reliable, although a greater proportion seemed satisfactory. CTD stations were often occupied coincident with a NAVSAT fix or only dead reckoned for a short distance so station position accuracy is probably within 1/2 n. mi.

3.3 Station Distribution

The distribution of oceanographic stations is shown in Figure 4. A total of 236 separate CTD stations were occupied; 19 using the helicopters (denoted by X) and the remainder from the ship (indicated by •). Typically, stations were spaced at 15 km intervals along the ship's track. As a result there is a heavy concentration of stations north and west of Belgica Bank. Other fairly well defined areas of station coverage include Belgica Dyb and two regions of the Polar Front (at 77°N and 79°N). Figure 5 identifies the stations by number along the ship track.

3.4 Physical Oceanographic Data

The physical oceanographic data is summarized in Appendix A. The first section of the Appendix is a listing of the physical oceanographic stations along with pertinent station data such as date/time of occupancy, position, sounding and some weather information. An explanation of the codes and units is provided in the Appendix.

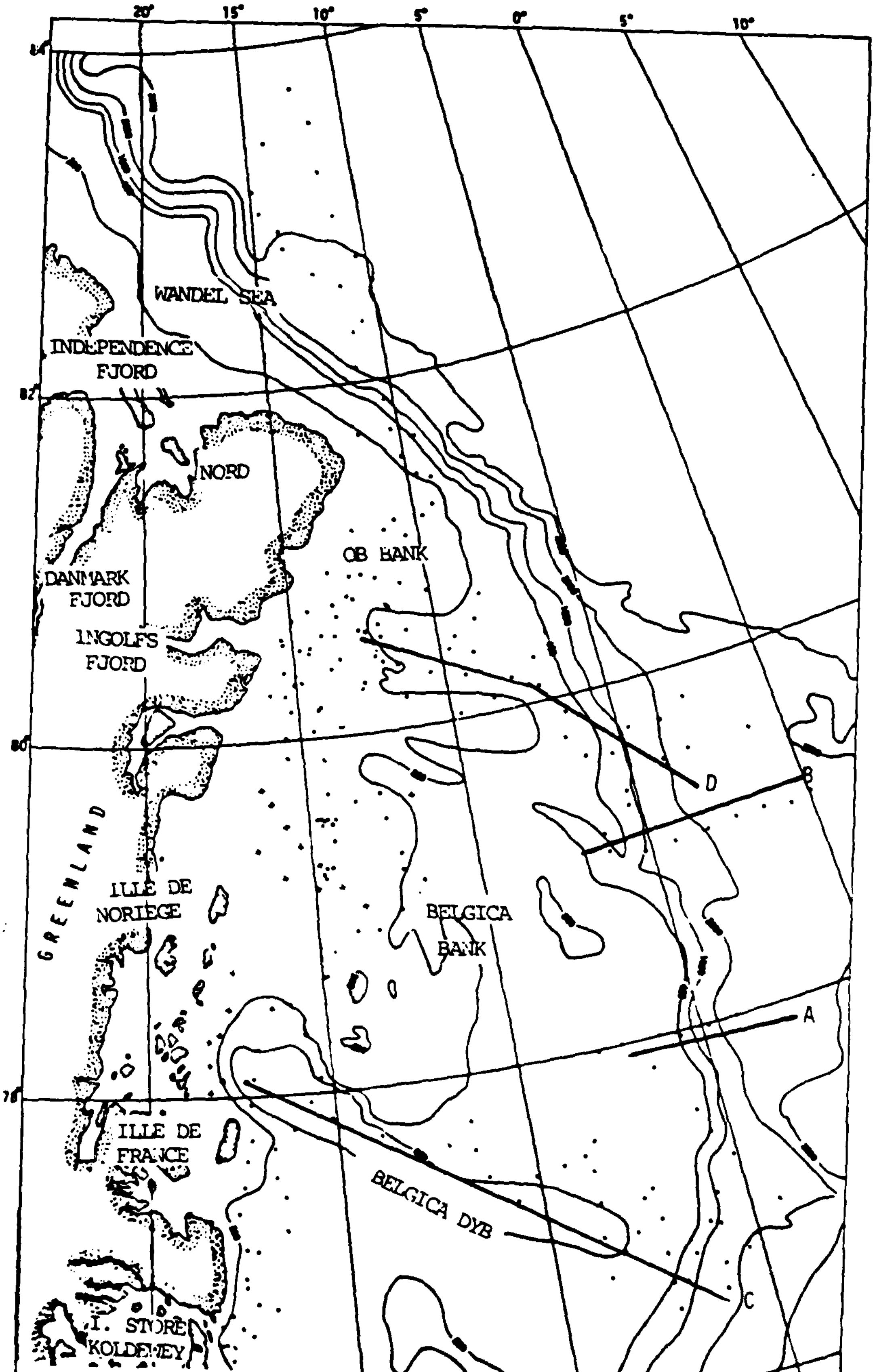

Figure 4. Distribution of oceanographic stations. Geographic features often referred to in the text are identified. Vertical sections along lines A through D are discussed in Section 4.3.

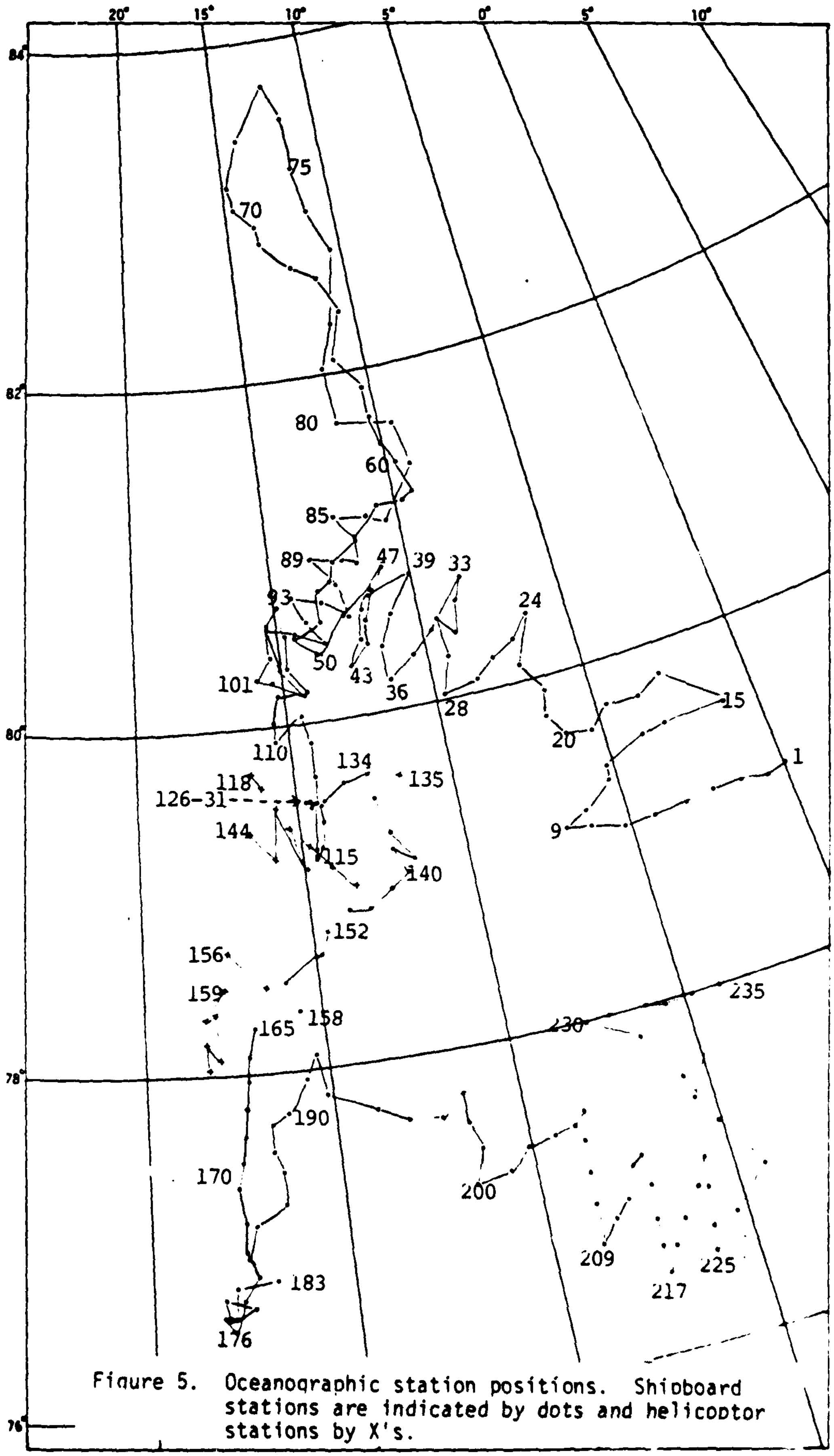

Figure 5. Oceanographic station positions. Shipboard stations are indicated by dots and helicopter stations by X's.

The second portion of the Appendix presents the physical oceanographic data in the form of vertical profiles of temperature, salinity, sound speed and sigma-T. The salinity was computed by converting the in-situ conductivity to an equivalent value at 15^{o}C and zero pressure. Using 42.896 (mmho/cm) as the conductivity at 15^{o}C and 35‰, the conductivity ratio was calculated and salinity determined by the equation utilized for the UNESCO Tables (c.f. Reference 2). The computation of sound speed follows WILSON (Reference 3).

4. PRELIMINARY RESULTS

4.1 Introduction

In a two part paper COACHMAN AND AAGAARD (Reference 4) discussed the water mass characteristics and many features of the velocity field of the East Greenland Current based on investigations to that time. They identified three major water masses, analogous to Arctic Ocean water mass classifications, in the current north of Denmark Strait; Polar Water; Atlantic Intermediate Water; and Deep Water. The profiles (Appendix A) define the Polar Water layer and penetrate into the upper portions of the Atlantic Intermediate Water.

Characteristic Polar Water (temperatures less than $0^{\circ}C$ from near-surface to the 150 to 200 m depth range) is evident in all profiles except for stations 3, 224, 225, and 235 which apparently lie to the east of the East Greenland Current in the Greenland Sea. Because near surface temperatures may be elevated in the summer and early fall, the Polar Water often manifests a subsurface temperature minimum between 50 and 150 m.

Atlantic Intermediate Water with temperatures greater than $0^{\circ}C$ underlies the Polar water to a depth of 800 m attaining a temperature maximum between 200 and 400 m. Nearly all profiles seaward of the continental shelf break show evidence of positive subsurface temperatures below 200 m indicating the upper layers of the Atlantic Intermediate Water. Positive subsurface temperatures are also found near the bottom over the deeper portions of the continental shelf; for example, extending shoreward along Belgica Dyb (c.f. stations 190 through 200), north of Belgica Bank (c.f. stations 22 through 52), and west of Belgica Bank (c.f. station 165 through 168).

4.2 Horizontal Temperature and Salinity Distributions

4.2.1 Introduction

Because of the nature of the cruise track, the oceanographic stations were not spaced evenly over the study region, nor were they synoptic. Thus, it is difficult to validly contour property values over the entire shelf region. The horizontal distributions presented in this section attempt to show the important oceanographic features which seemed to be properly defined by the station configuration.

4.2.2 Near Surface Temperature and Salinity

Figures 6 and 7 show the horizontal distribution of near-surface (usually upper 1 to 2 m) temperature and salinity. Positive surface temperatures (hatched areas) occasionally reaching +2°C, were found in the open water areas east of the ice edge. Within the ice, surface temperatures were negative, typically less than -1.5°C. The transition from positive to negative surface layer temperature coincided closely with the crossing of the ice margin. It should be noted that the transition from a warm ($>0^{\circ}$C) to a consistently cold ($<-1.5^{\circ}$C) surface layer occured over a very short distance for the ice edge crossings at 78° and 79°N, while at 77°N the transition region was rather broad ($\sim$60km). Exceptions to the generally cold surface temperatures over the shelf occured in two localized regions where surface temperatures were $>$-0.5°C. One of these areas lies north of Ob Bank on the continental slope at about 82°N, 10°W and the other is between Ob and Belgica Banks centered at about 80°-30'N, 12°W. The later region of warmer surface temperature appears to extend seaward from the vicinity of Ingolfs Fjord along the northern limit of Belgica Bank.

The highest surface salinities (>33‰) were found east of the ice margin in open water (Figure 7), coincident with the regions of positive surface temperatures. Within the ice and over the majority of the midshelf region surface salinities fell in the 31 to 32‰ range. Low salinity waters

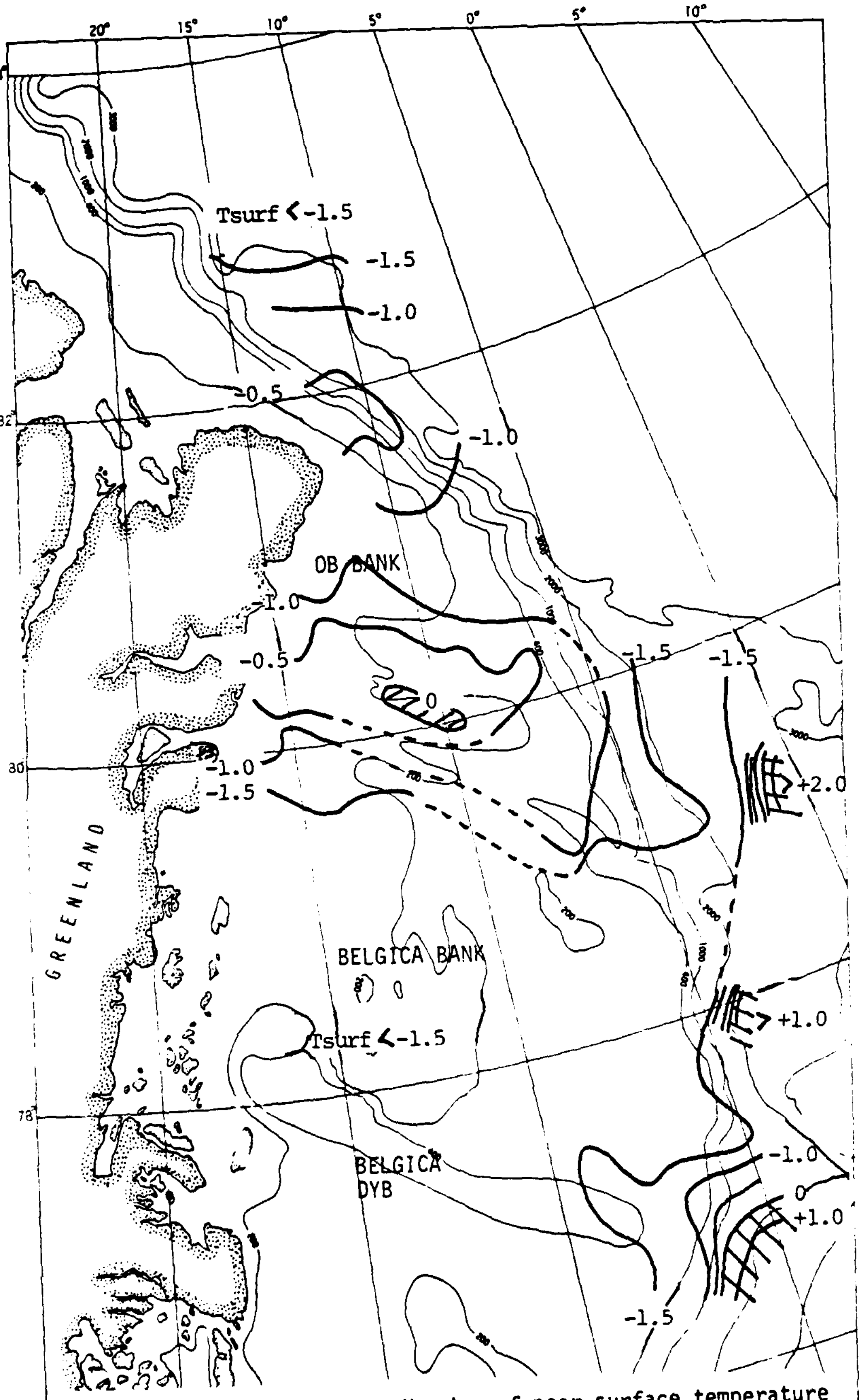

Figure 6. Horizontal distribution of near-surface temperature (usually the upper 1 to 2 m). Contour interval is 0.5°C from -1.5 to 0°C and 1.0°C above 0°C.

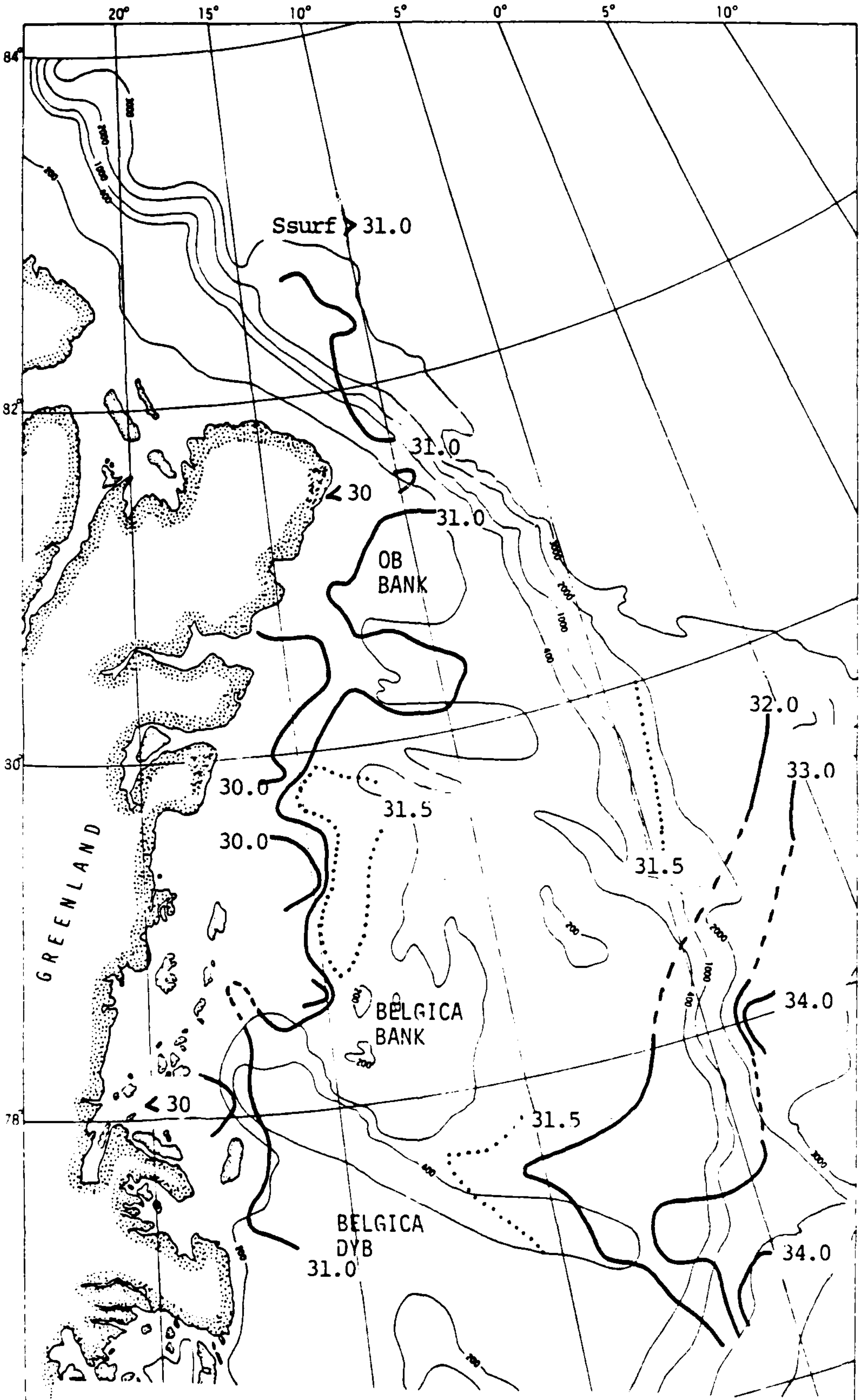

Figure 7. Horizontal distribution of near surface salinity (usually the upper 1 to 2 m). Contour interval is 1‰ except that the 31.5‰ contour is also indicated.

(<30‰) are evident in the near-shore areas as intrusions extending out from local areas of the Greenland coast. Two regions of lower salinity waters which extend a significant distance seaward across the shelf occur coincident with the warmer on-shelf surface water areas described above; i.e. north of Ob Bank and between Ob and Belgica Banks. It appears reasonable that the relatively warm and less saline regions within the peak ice do coincide. A thin layer of fresh water, perhaps from a continental source, would tend to reduce near-surface vertical mixing and thus heat from insolation would be maintained in the upper layers. A positive feed back could exist where the warmer surface layer would melt sea ice locally, decreasing surface salinity and further reducing vertical mixing. This could result in fairly persistent areas of low salinity/warm temperature near-surface water within the pack ice over the shelf.

Two features of the near-surface temperature/salinity distribution (Figure 6 and 7) may reflect the surface circulation pattern. The tongue of warm, less saline water extending eastward across the shelf north of Belgica Bank suggests an eastward flow; while over Belgica Dyb the isolines show an intrusion of warmer, more saline water westward across the shelf. This pattern is consistent with an anticyclonic circulation of the surface waters around Belgica Bank.

4.2.3 Polar Water

Characteristic Polar Water was found at all stations except four which were apparently located east of the East Greenland Current. As most stations had some amount of surface warming, a subsurface temperature minimum occured within the Polar Water.

Within certain geographic areas the temperature and salinity characteristics of the Polar Water were quite homogeneous and displayed little station-to-station variability. There were, however, significant differences in Polar Water characteristics on the larger, regional scales. Figure 8a compares the vertical temperature, salinity and sigma-T versus depth profiles

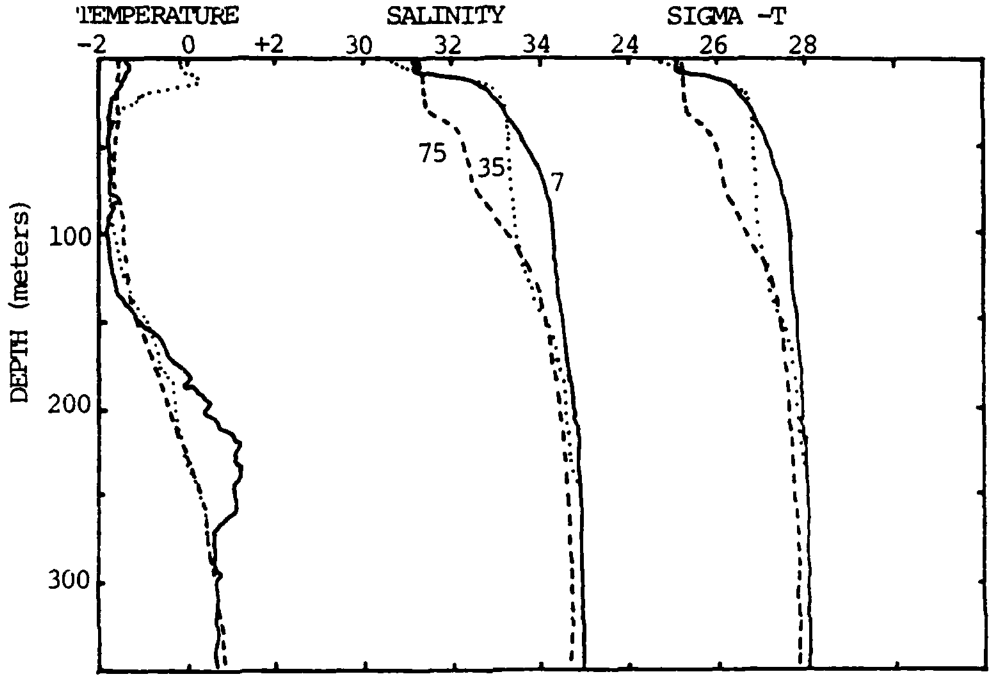

Figure 8a. Comparison of vertical profiles of temperature (°C), salinity (‰) and sigma-T at three stations: Station 7, 35, and 75.

for three stations positioned within different areas of the overall study region. Station 7 is from within the East Greenland Current south of Nord; Station 75 is in the East Greenland Current north of Nord; and Station 35 is located on the continental shelf north of Belgica Bank (Figure 5). Figure 8b is the T-S correlation for these stations. All three stations show Polar Water (<0°C) extending from the surface to a depth of 180 to 240 m. The lower boundary of the Polar Water (0°C isotherm) coincides with a salinity of about 34.5‰

Above the 0°C isotherm the profiles, especially the vertical distribution of salinity, show significant differences. Along the continental slope north of Nord (Station 75), the salinity of the Polar Water is lower than at the other locations and the vertical profile shows a large vertical scale step-like structure with low vertical salinity gradient regions in the depth bands 0 to 30 m, 40 to 75 m and below 150 m, which are separated by layers of significantly higher vertical gradients. A temperature minimum (-1.77°C) occurs at about 65 m depth with a corresponding salinity of about 32.4‰. In contrast, Station 7, located within the East Greenland Current south of Nord shows significantly higher salinities (1-2‰ greater) throughout the Polar Water. At station 7 the minimum temperature (-1.82°C) occurs at 100 m and has a salinity of 34.3‰. Station 35 seems typical of many of the stations taken on the continental shelf. Except for the influence of near-surface heating/freshening and the warming below by the Atlantic Intermediate Water, there is a fairly large depth band occupied by a cold water mass of rather uniform salinity. The salinity is nominally in the 33.0 to 33.3‰ range, thus falling between the two salinity extremes discussed above for within the East Greenland Current. In this case the minimum temperature of -1.81°C occurs at 57 m and has a salinity of 33.26‰ .

The T-S correlations (Figure 8b) plotted at 10 m depth increments further highlight the differences in the Polar Water temperature-salinity structure. The on-shelf station (Station 35) shows a relatively large amount of cold water (depths 40 to 100 m) concentrated in narrow salinity range (33.2 to 33.4‰) at the temperature minimum. In the East Greenland Current north of

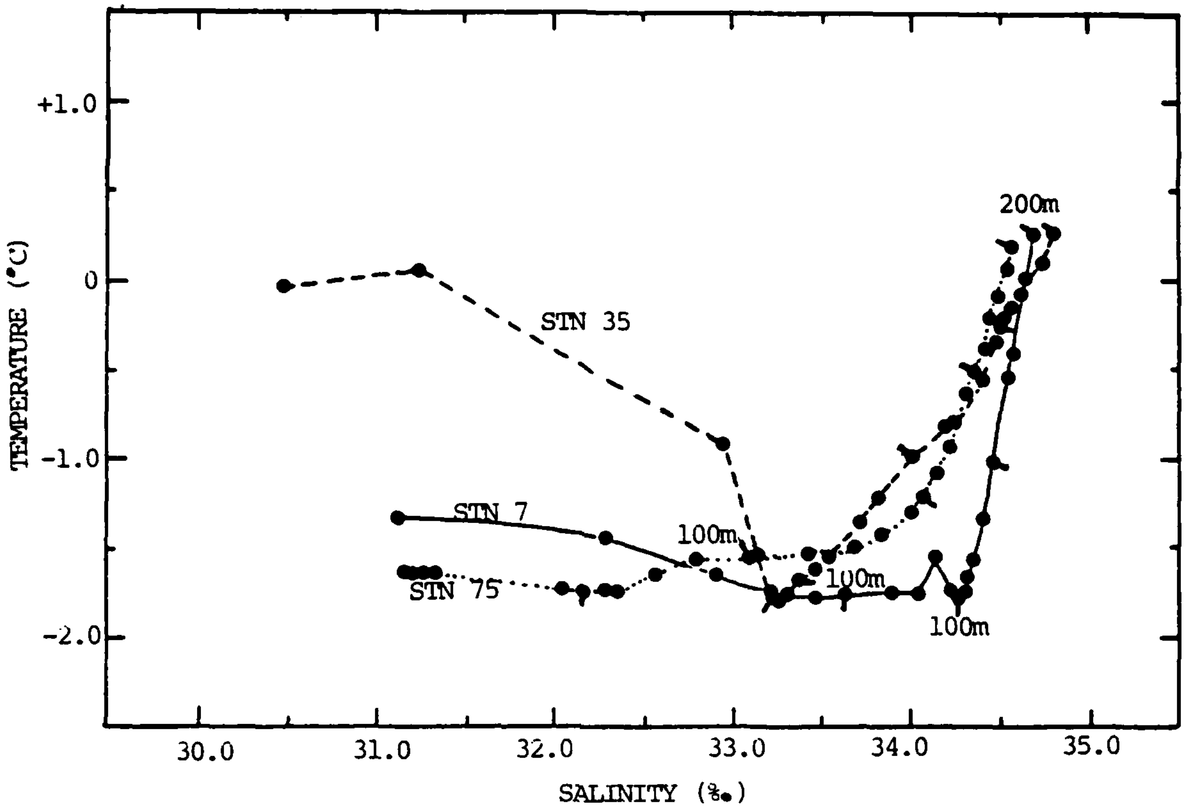

Figure 8b. Comparison of temperature-salinity correlations at Stations 7, 35, and 75.

Nord Station 75), the colder water is more evenly distributed over the salinity range 31 to 34‰ South of Nord within the East Greenland current, the cold temperatures are associated with significantly higher salinities, to in excess of 34‰ .

The temperature, and especially, the salinity characteristics of the temperature minimum seemed to be a useful parameter for differentiating the different types of Polar Water structure observed. Figure 9 plots the temperature/salinity characteristics of the temperature minimum on the T-S plane. For this plot all stations were included except those with minimum temperatures greater than -1.25°C (Stations 3, 221, 224, 225, 227 and 235) and those in very shallow water where the temperature minimum often occured at the bottom (Stations 83-85, 89, 97, 104, 112, and 169). The stations fall into three fairly distinct groups based on temperature, and more obviously salinity characteristics. Stations in the East Greenland Current north of Nord have temperature minimums less than -1.6°C in the salinity range 31.9 to 32.8‰ . Continental shelf stations display temperature minimums usually less than -1.55°C and in the salinity range 32.95 to 33.4‰ . Stations with temperature minimums whose associated salinity is 34.1 to 34.4‰ are found in the East Greenland Current south of Nord. Stations with somewhat warmer minimum temperatures (-1.25 to -1.55°C) are concentrated south of Ob Bank.

The specific geographic distribution of the temperature minimum characteristics is shown in Figures 10 and 11 which plot the horizontal distribution of the minimum temperature within the Polar Water and the associated salinity. Stations without a significant Polar Water component (i.e., T min >-1.0°C) are located seaward of the 1000m contour, presumably east of the East Greenland Current. The warmest minimum temperatures (T min >-1.5°C) within the Polar Water are found in the shallow areas of Ob Bank. The salinity distribution (Figure 11) clearly shows the regional distribution of the temperature minimum types. Notice there is little variability within each region and that the major salinity changes occur over rather sharp boundaries with few transition values between regions. It should also be noted that certain stations, particularly in the vicinity of the East Greenland

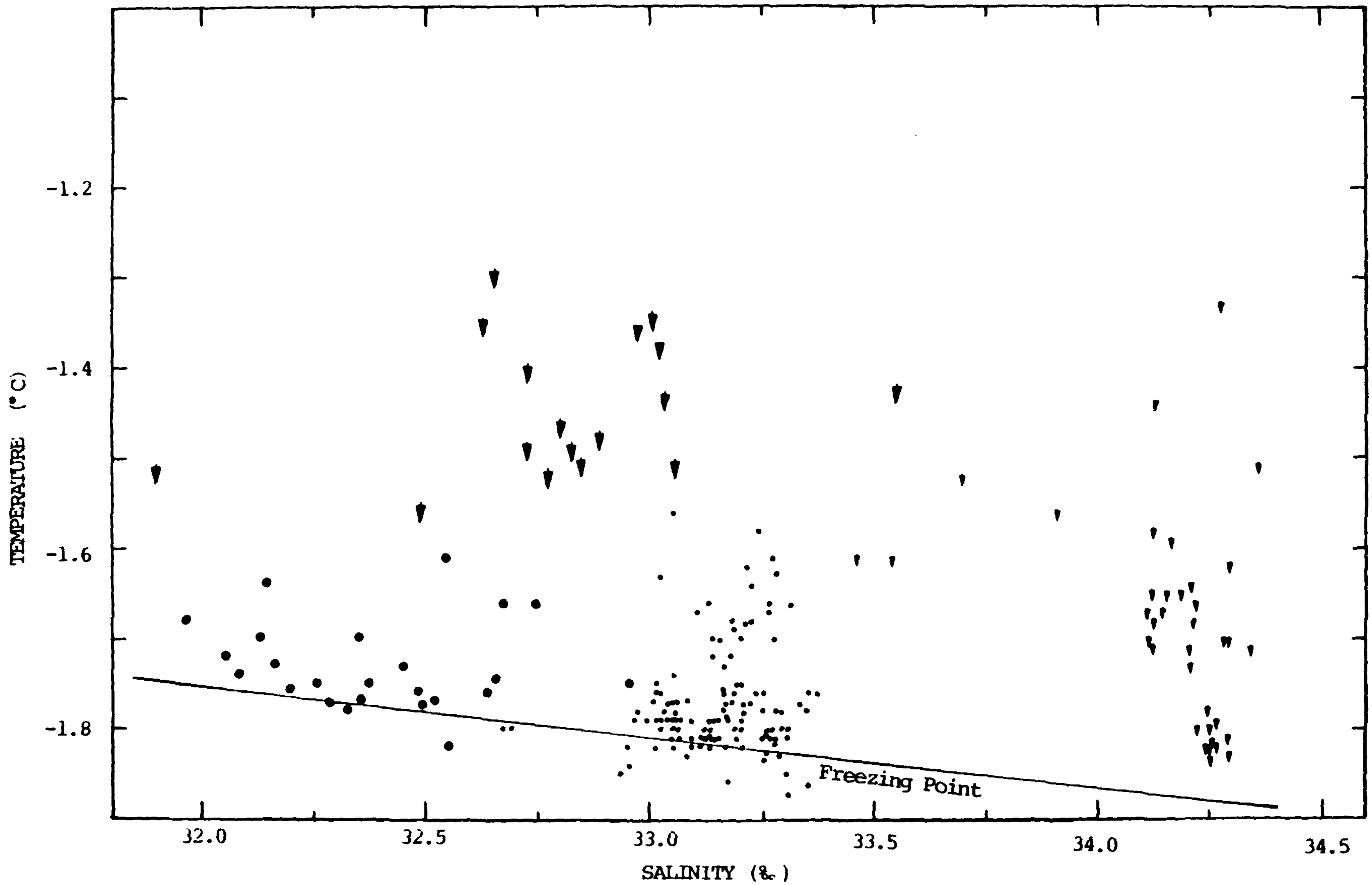

Figure 9. Temperature-salinity characteristics of the Polar Water temperature minimum. The different symbols indicate the geographic regions as follows: (●) stations north of Nord, (•) stations on the East Greenland Shelf, (▾) East Greenland Current south of Nord, (▼) Ob Bank. The Freezing point line is from Reference 5.

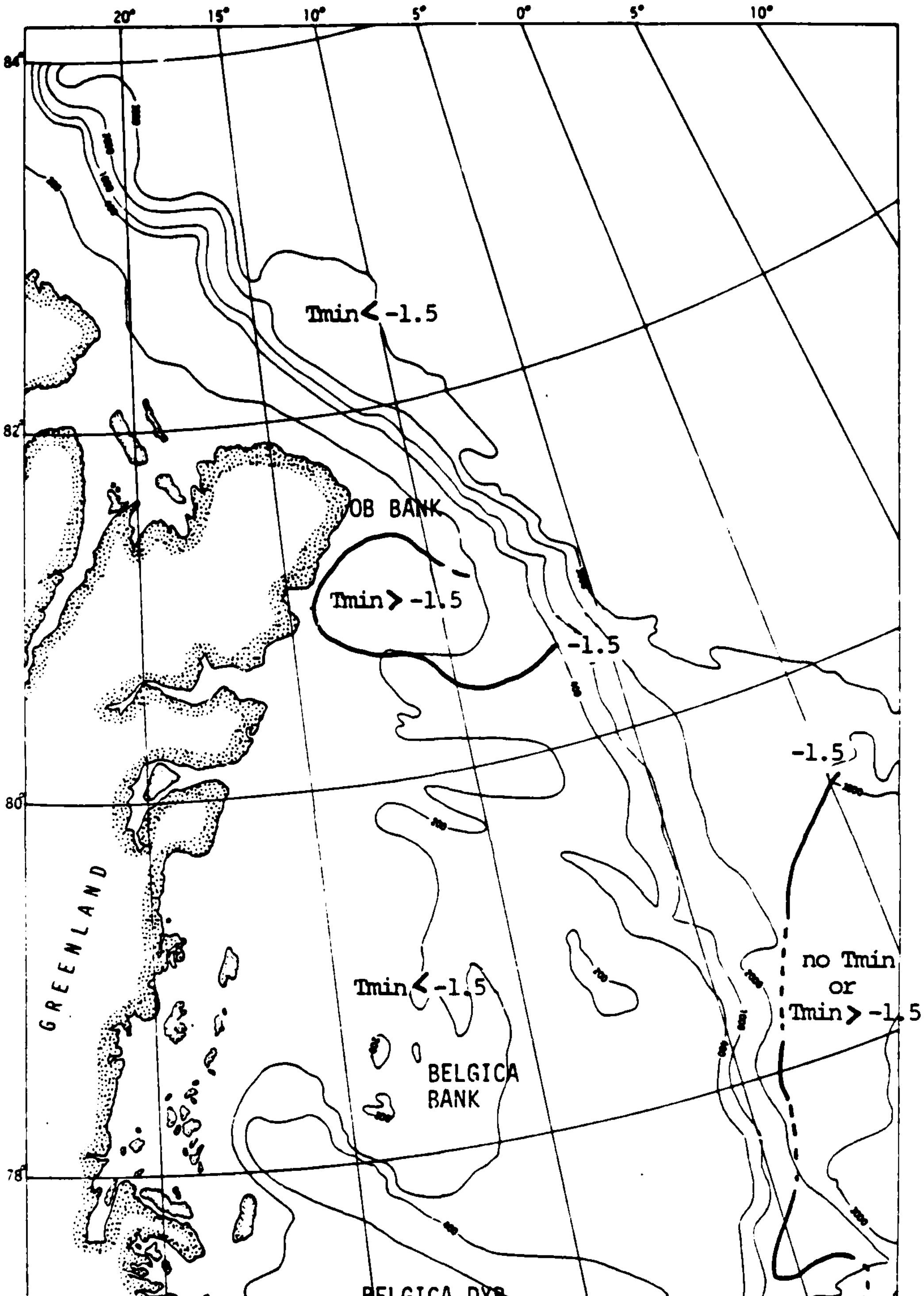

Figure 10. Horizontal distribution of temperature (^{o}C) at the Polar Water temperature Minimum.

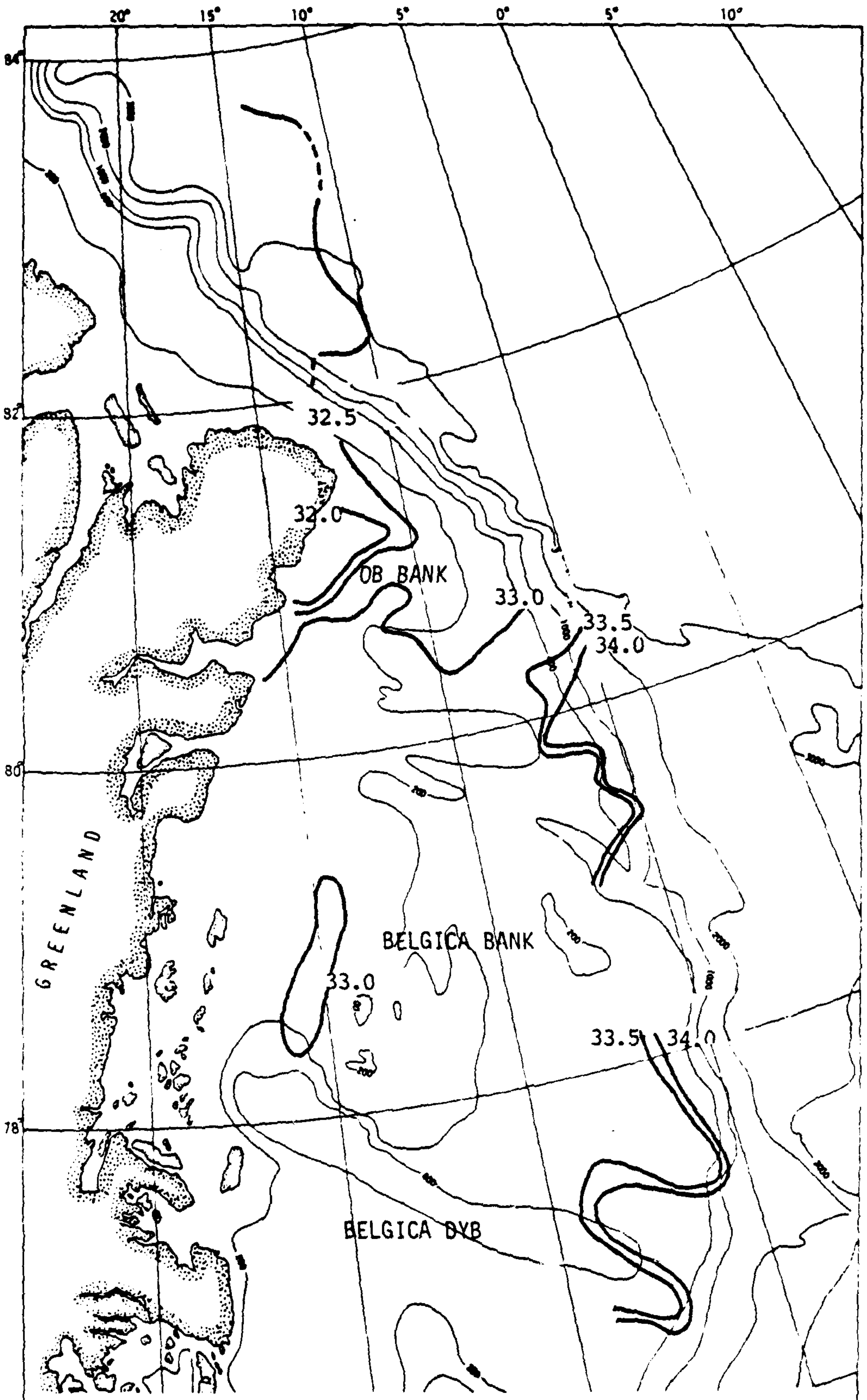

Figure 11. Horizontal distribution of salinity (‰) at the Polar Water temperature minimum. Contour Interval is 0.5‰ .

Current crossing at 79°N showed evidence of two minimums suggesting a lateral exchange across the transition regions.

4.2.4 Atlantic Intermediate Water

Atlantic Intermediate Water lies below the Polar Water and is readily identified by its positive subsurface temperatures which usually attain a maximum between 200 and 400 m. Figure 12 shows the horizontal distribution of the temperature at 300 m. On-shelf stations in regions where the depth exceeded 300 m are hatched and the 300 m temperature is indicated. In the off-shelf region north of Nord, 300 m temperatures fell within a narrow range of +0.33 to +0.61°C. In the off-shelf region south of Nord a much greater range of 300 m temperatures is evident: from a minimum of +0.62 to a maximum of +1.87°C. The 300 m isotherm patterns in the East Greenland Current south of Nord suggest the intrusion of rather warm (and also saline) water from the east into the Atlantic Intermediate Layer from the vicinity of 80°N south to at least 77°N. Presumably, this is evidence of the influence of the Return Atlantic Current, which originates as a westward branch of the West Spitzbergen Current.

Positive 300 m temperatures were found through the length of Belgica Dyb. These temperatures tended to decrease from nearly +1.0°C at the seaward entrance to the Dyb to less than +0.5°C at its shoreward end.

Two other near-shore regions within the survey area had depths of greater than 300 m; one extending north and south of the shoreward end of Belgica Dyb, and the other near the mouth of Ingolfs Fjord centered at about 80°-15'N, 14°-00'W. The 300 m temperatures were positive within these areas. Bathymetric data collected during the cruise indicates that the near-shore region south of Belgica Dyb with 300 m temperatures of about +0.4°C is connected to the shoreward end of the Dyb via an alongshore trough with depths in excess of 250 m. This alongshore trough also extends north to about 79°-30'N where depths shoal to 150 to 200 m. The region of positive 300 m temperatures (+0.2 to +0.4°C) off Ingolfs Fjord is bathymetrically connected to

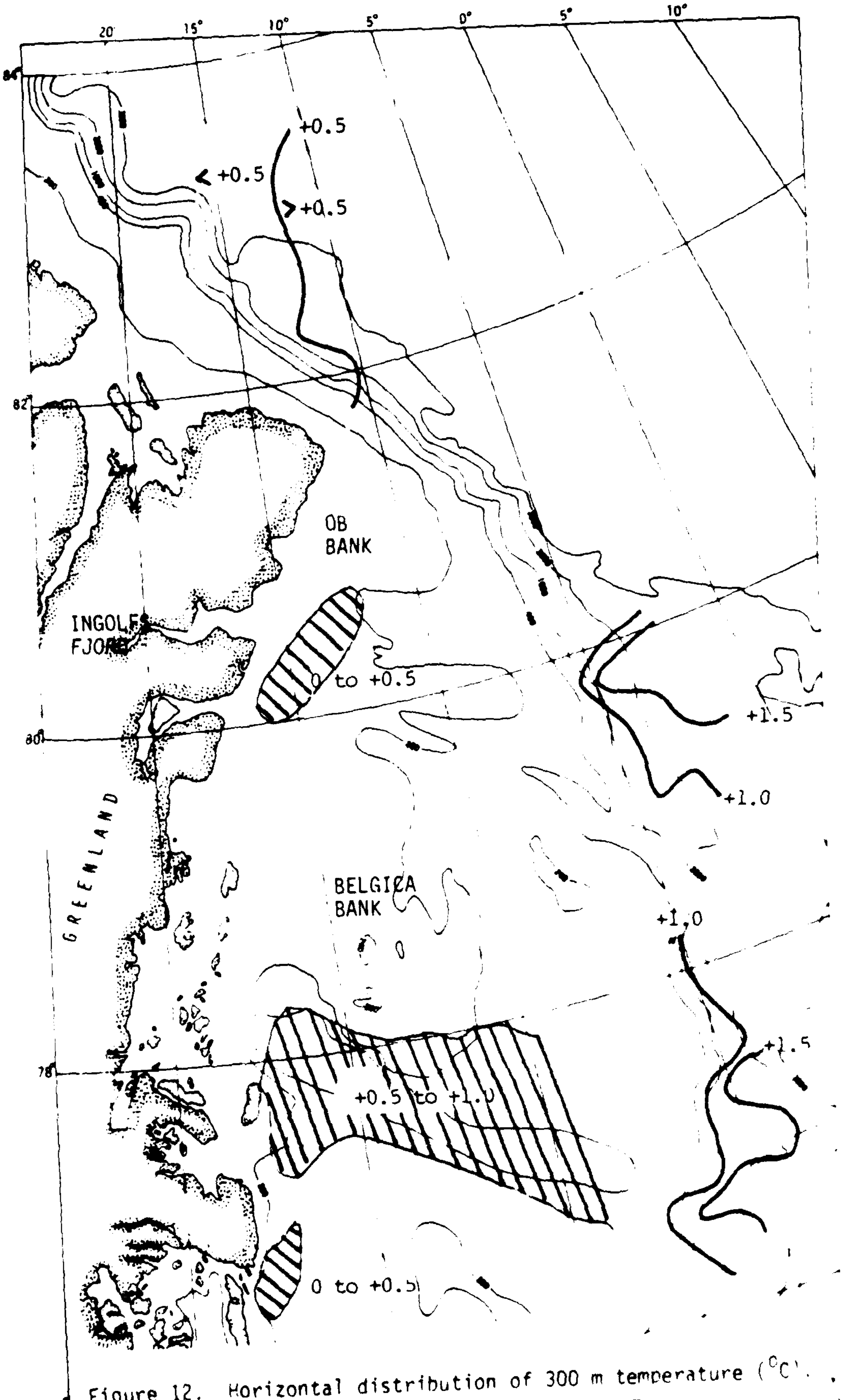

Figure 12. Horizontal distribution of 300 m temperature (°C).

offshelf waters via two potential paths; one north of Belgica Bank (250 to 300 m depth minimum) or south to Belgica Dyb (150 to 200 m depth minimum).

It appears that the Atlantic Intermediate water is not confined to the off-shelf deeper waters but spreads across the shelf via deep water paths into very near-shore troughs which tend to parallel the coastline. Two potential paths are Belgica Dyb and a trough north of Belgica Bank off Ingolfs Fjord.

4.3 Vertical Sections

4.3.1 Introduction

This section presents a few preliminary vertical cross sections of temperature and salinity across the Polar Front, along Belgica Dyb and in the trough north of Belgica Bank. These regions and the associated stations were chosen to identify some features of particular interest which will merit further analysis.

4.3.2 Polar Front

Two sets of stations were used to construct vertical sections across the East Greenland Current. Stations 1 through 9, occupied during the period 1600Z 19 August to 1445Z 20 August 1979, form an east-west line (line B, Fig. 4) along latitude 79^{o}-05'N. A second east-west line, located 120 km south along 78^{o}N, is made up of Stations 230 through 235 (line A, Fig 4) taken from 1100Z to 2330Z on 24 September 1979. Both sections are fairly synoptic, have a station spacing of about 15 km and profile the Polar Water to a depth of 300 m from the eastern current boundary shoreward to about the 200 m curve.

The temperature and salinity cross sections along 78^{o}N are shown in Figures 13 and 14. Temperatures at the eastern-most station (235) were positive except for a thin layer between 40 and 50 m with negative temperatures, perhaps indicative of an eastward intrusion of cold Polar Water.

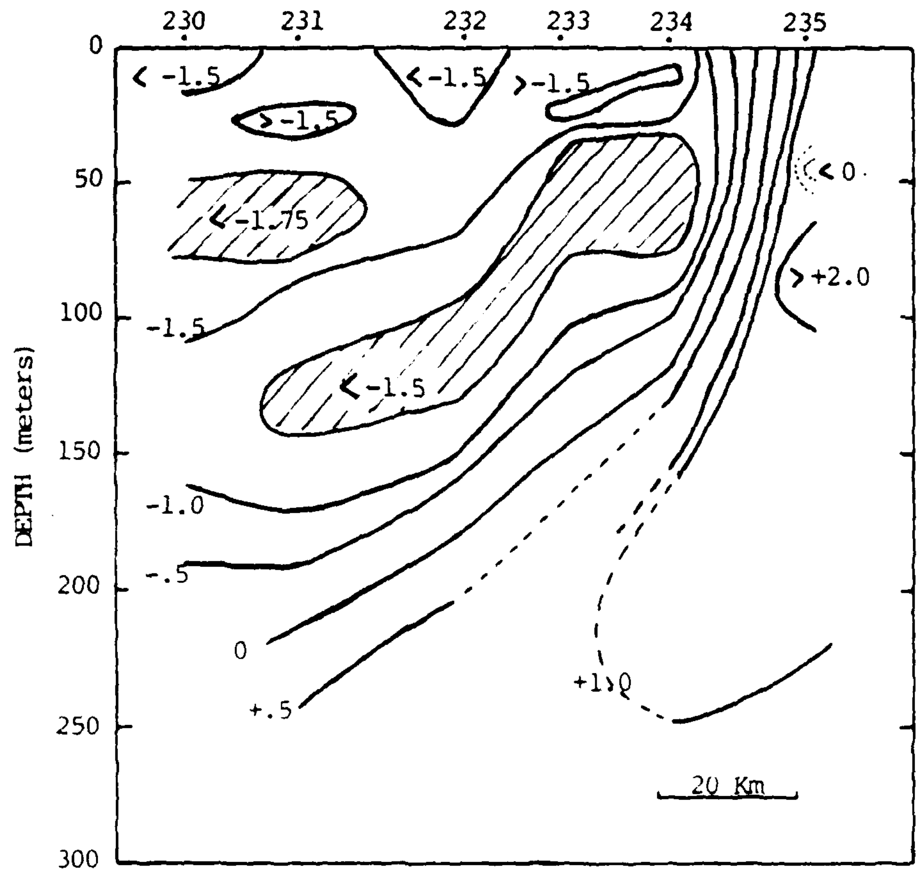

Figure 13. Vertical distribution of temperature (°C) across the East Greenland Current at about 78°N, from 0° to 7°W. Line A, Figure 4.

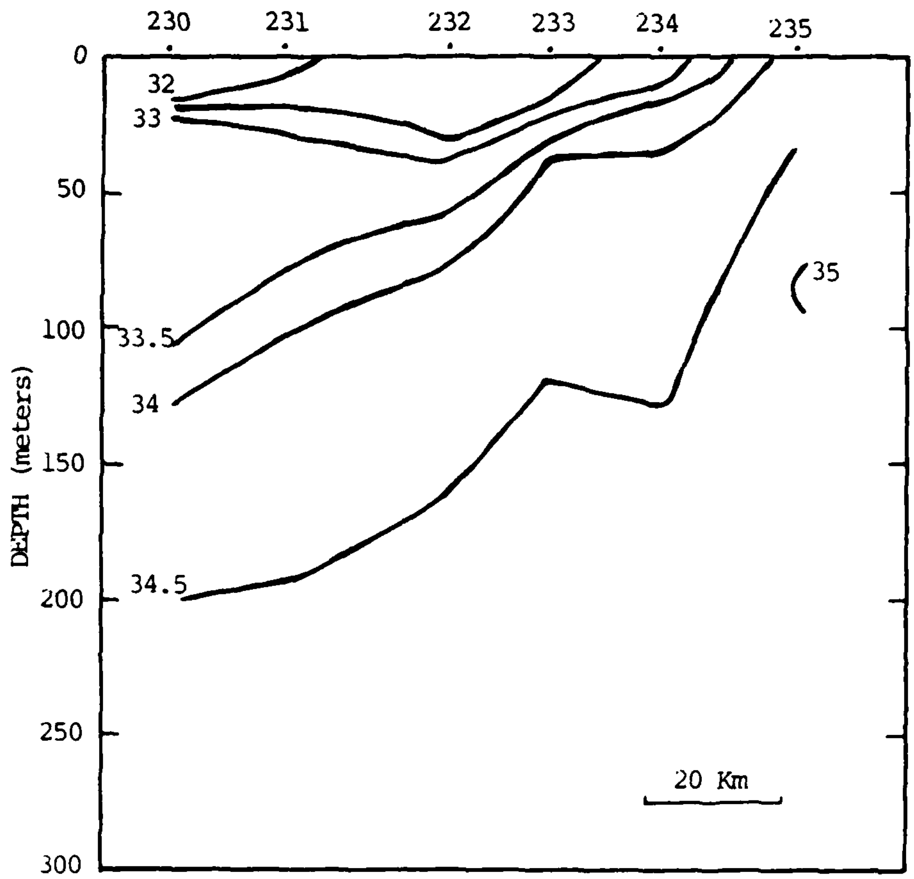

Figure 14. Vertical distribution of salinity (‰) across the East Greenland Current at about 78°N from 0° to 7° W. Line A, Figure 4.

The remaining stations (230 through 234) were within the East Greenland Current with significant amounts of sub-zero water. The eastern boundary of the East Greenland Current lies between Stations 234 and 235, and as noted by AAGAARD and COACHMAN (Reference 4) is approximately coincident with the location where the $0^{o}C$ isotherm and 34.5‰ isohaline shoal through 50 m. The 20 km region between stations 234 and 235 contains the Polar Front across which the near-surface water mass properties change from cold and relatively fresh to rather warm and saline. The Polar Water Layer ($T < 0^{o}C$, $S < 34.5$‰) increases in thickness westward across the current from nominally 50 m between Stations 234 and 235 to in excess of 200 m at station 231, a distance of about 60 km. The slope of this boundary ($T = 0^{o}C$, $S = 34.5$‰) is approximately 3.3 m per km over most of the width of the current, but must become significantly greater near the eastern edge.

The temperature in Figure 13 is contoured in greater detail in the upper layers to show some of the important features of the hydrographic structure. Temperature-salinity plots were used as an aid in constructing the temperature section so that the maxima/minima contoured as continuous features across two or more stations do have similar T-S characteristics. Near surface temperature maxima occur at 3 stations (231, 233 and 234). The maxima ranged from -1.35 to $-1.00^{o}C$ and occurred coincident with the 33.0‰ isohaline (32.9 to 33.1‰). Two relative minima are indicated in Figure 13. The first occurs between 50 and 80 m at Stations 230 and 231, located at the western end of the section near the shelf. The characteristics of the minimum are temperature less than $-1.75^{o}C$ and salinity in the range 33.25 to 33.35‰; identical to the Polar Water minimum characteristics found on the continental shelf (sec. 4.2.3). A second, deeper relative minimum extends across Stations 231 through 234. This minimum has temperatures less than $-1.5^{o}C$ and salinities in the 34.1 to 34.3‰ range. This is the high salinity minimum discussed in section 4.2.3 and associated with the off-shelf stations of the East Greenland Current south of Nord. Proceeding toward the shelf, the deeper, higher salinity temperature minimum slopes downward from nominally 50 m at Station 234 to 130 m at Station 231 where it underlies the colder, less saline, shelf associated temperature minimum.

From Station 3 westward to Station 9, near the shelf break, the temperature and salinity cross section at 79°N (Figures 15 and 16) displays many of the same characteristics as the section located farther south at 78°N and occupied a month later. The Polar Front and the eastern boundary of the current occur between Stations 3 and 4 with the transition from warm saline to colder fresher waters taking place over a distance of less than 20 km. Station 4, which may represent conditions in the transition region, shows strong evidence of lateral interaction with three significant temperature inversions ranging from 0.5 to greater than 1.5°C. As before, two distinct temperature minima can be discerned. A minimum of less than -1.75°C is coherent across Stations 5 through 8 with corresponding salinities in the 34.2 to 34.35‰ range, similar to the deep saline temperature minima identified in the 78°N cross section. A second temperature minimum of less than -1.75°C and salinity of 33.25 to 33.75‰ lies above the deep minimum at Stations 5, 6, 8 and 9.

An interesting feature of this particular section is the subsurface core of relatively cold water (less than -1.0°C) lying east of Station 3 (which had positive temperatures to depths in excess of 350 m and presumably marked the eastern boundary of the current). This phenomena has been observed and described earlier by AAGARD and COACHMAN (Reference 4) based on stations taken in 1965 which were interestingly, but perhaps only coincidentally, located within a few miles of this section. They ascribed the presence of this cold core to an eddy or meander which displaced a parcel of Polar Water eastward of the Polar Front boundary. Although only located 30 to 40 km from the East Greenland current in this case, the cold core has characteristics which are both similar and different to the water mass within the current. The cold core is located at a depth of about 50 to 60 m with a temperature of about -1.4°C and salinity in the 34.2 to 34.4‰ range. Thus, the cold core salinity is similar to the deeper, more saline temperature minimum within the current and its temperature is about 0.3 to 0.4°C higher. In contrast, the cold core at stations 1 and 2 displays none of the characteristics of the shallower, less saline ($\sim$ 33.5‰) cold waters which occupy the upper 50 meters or so of the East Greenland Current. This suggests that either the mixing in the near-surface layers had destroyed the surface manifestation of the current or

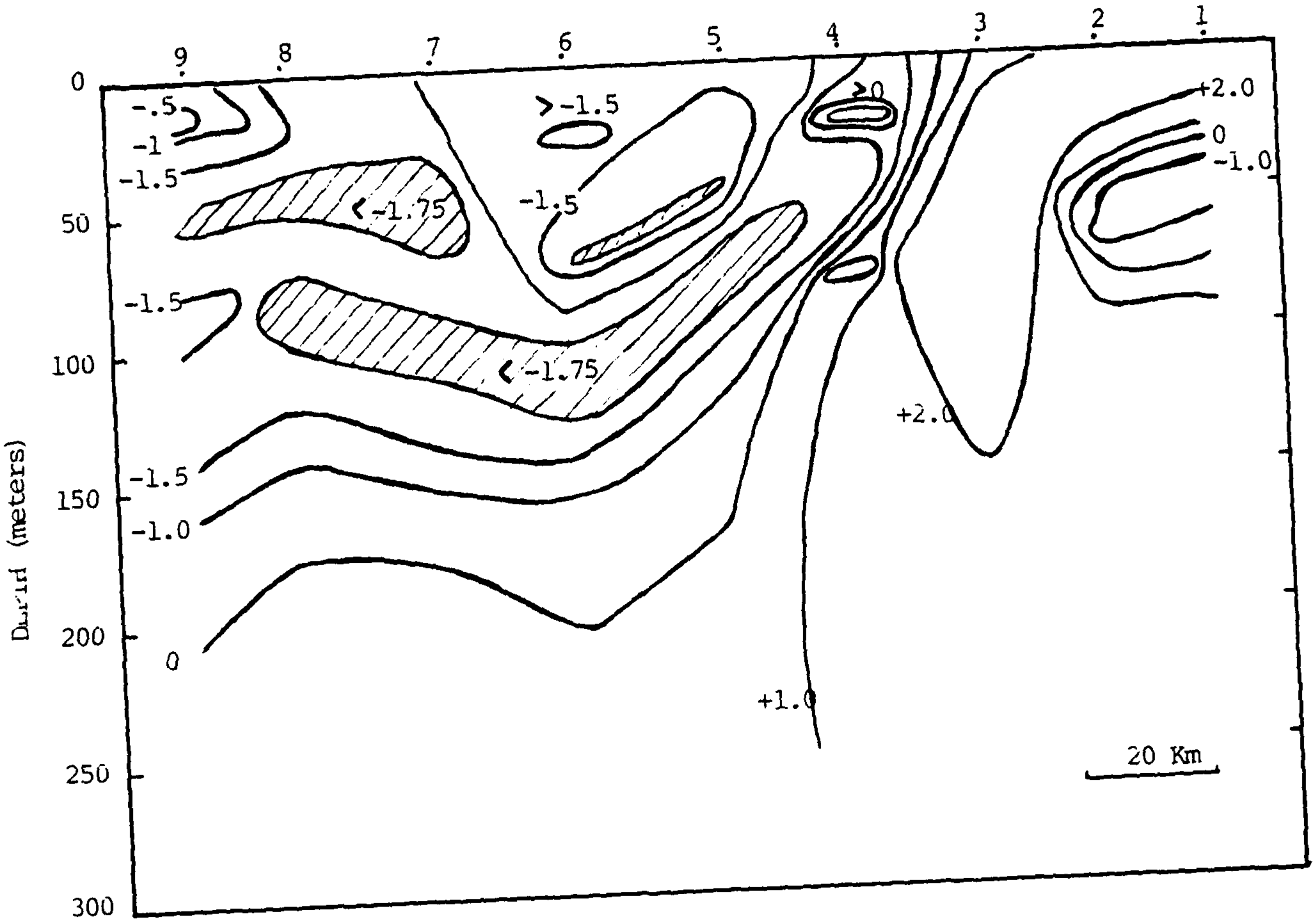

Figure 15. Vertical distribution of temperature (0°C) across the East Greenland Current at about 79°N. Line B, Figure 4.

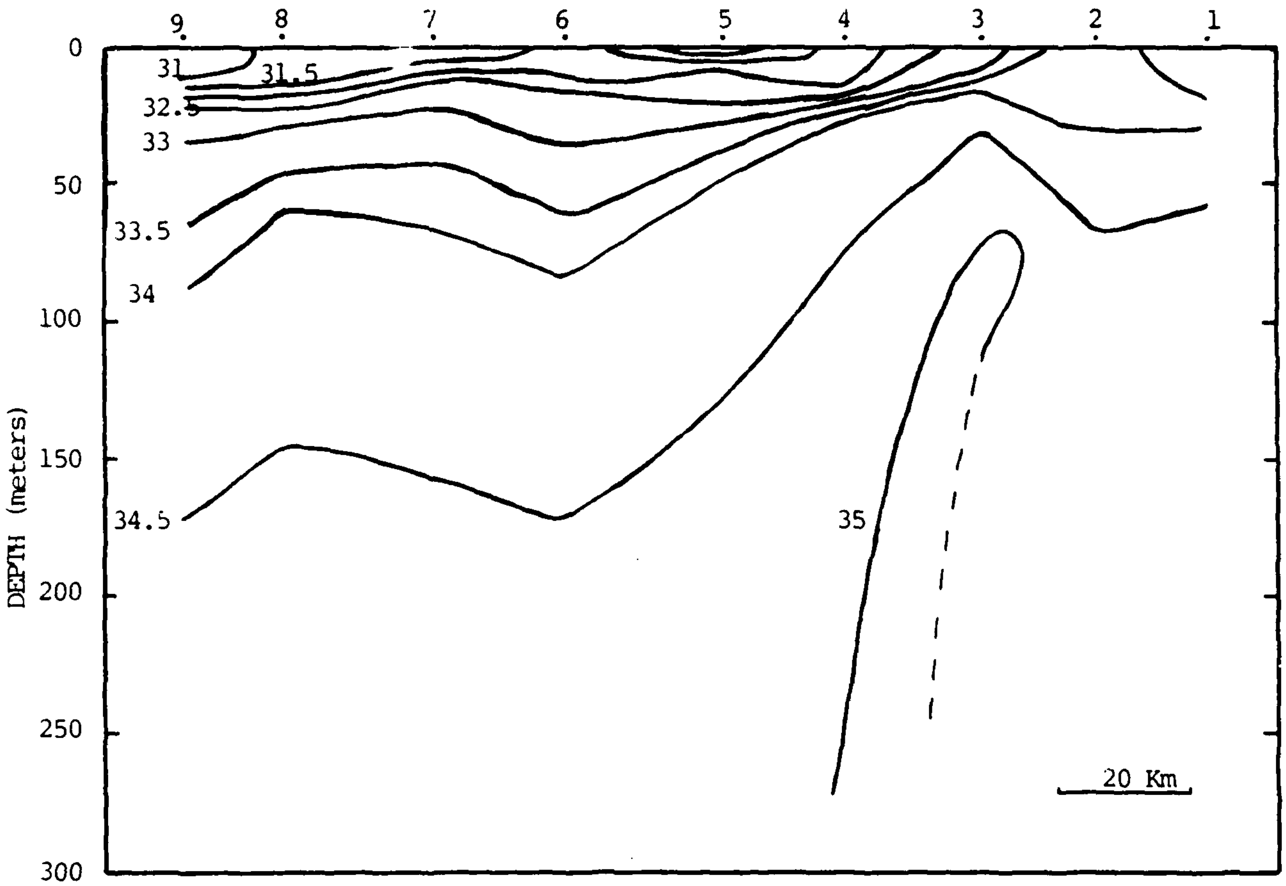

Figure 16. Vertical distribution of salinity (‰) across the East Greenland Current at about 79°N.

perhaps the meander or lateral exchange mechanism occurs below the pycnocline which, at Station 4, is located between 15 and 30 m.

4.3.3 Belgica Dyb

Temperature and salinity cross sections were constructed along *Belgica Dyb* (*Figures 17 and 18*) using data from Stations 167, 193, 195, 196, 199, 202, 207, 211, 215, and 225 along line C, Fig. 4. Station 167 was taken on 16 September while the remaining stations were occupied during the period 2000Z 20 September through 2300Z 23 September 1979. The stations were selected to show the vertical temperature and salinity distributions along the axis of the Dyb from the near-shore region (Station 167) seaward across the East Greenland Current and Polar Front (Station 225). The isolines demarking the Polar Water ($0^{o}C$ and 34.5‰) dip sharply from near 50 m to about 200 m on crossing the Polar Front and East Greenland Current from east to west (Stations 225 to 207) as noted in previous cross-sections. The $0^{o}C$ and 34.5‰ isolines continue to deepen, but at a slower rate, proceeding shoreward along the Dyb, reaching 250 m or more at the near-shore end of the section. The wave-like pattern of the isolines superimposed on the general trend of deepening-to-shoreward may partially result from cross-channel variability as the stations are not necessarily exactly on the Dyb axis. The detailed structure of the Polar Water in the Dyb shows some similar characteristics to that of the East Greenland Current. For example, two temperature minimum layers can be discerned; a near-surface minimum with temperatures less than $-1.75^{o}C$ and salinities in the range of 33.0 to 33.3‰ and a deeper, more saline minimum of less than $-1.5^{o}C$. The low salinity temperature minimum, characteristic of the shelf, is found at the shoreward end of the Dyb and can be traced east to station 202. The deeper, higher salinity temperature minimum appears at the seaward end of the Dyb, extending west to station 196.

The near-surface waters at the shoreward end of the Dyb are relatively fresh (less than 32‰) and are often vertically homogeneous. There is a sharp halocline, and thus a sharp pycnocline at 25 to 40 m where salinities typically increase 1.5‰ over a 10 to 15 m depth increment. A

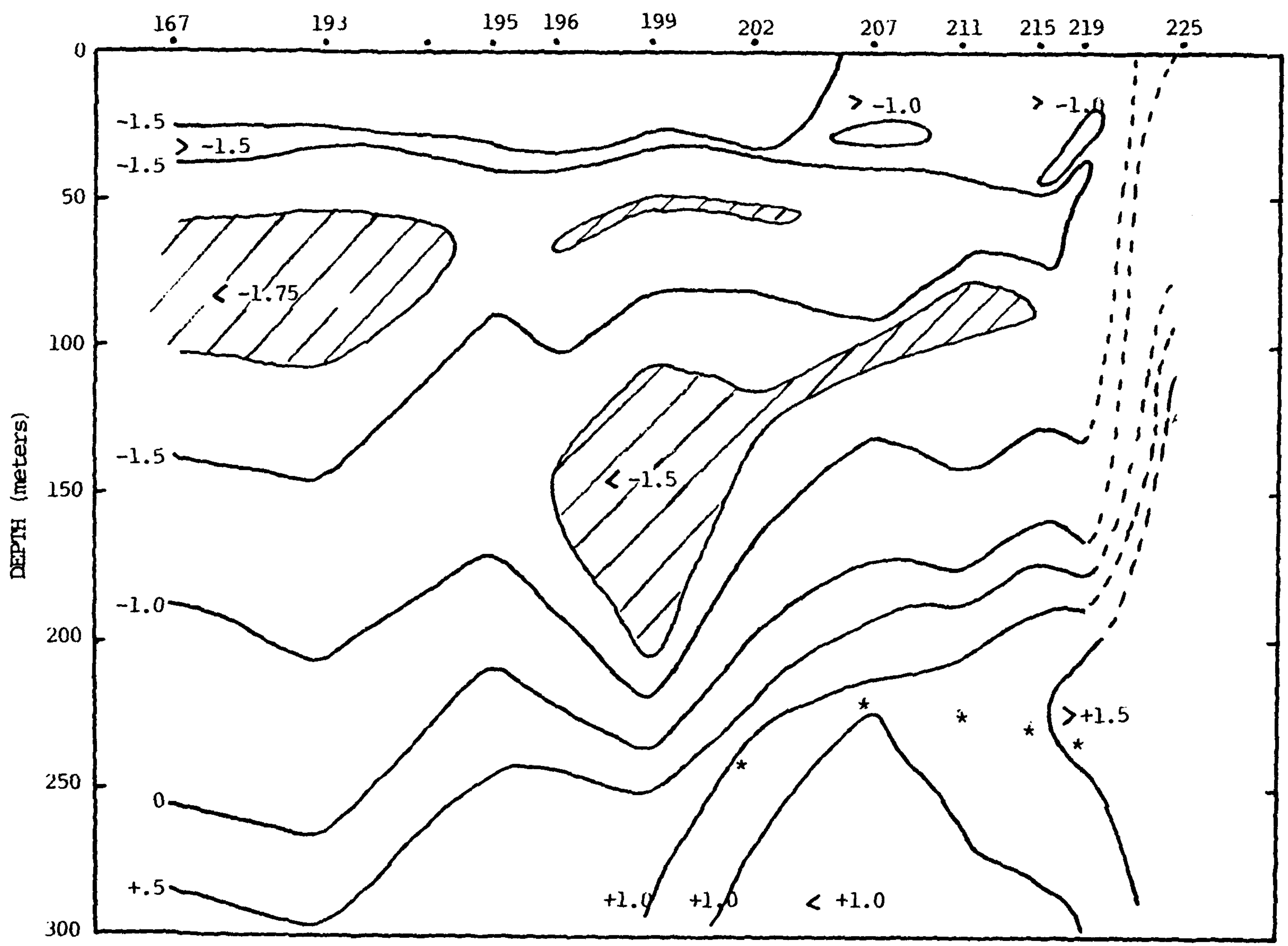

Figure 17. Vertical distribution of temperature ($^{\circ}C$) along Belgica Dyb. Temperature maximums are indicated by *. Line C, Figure 4.

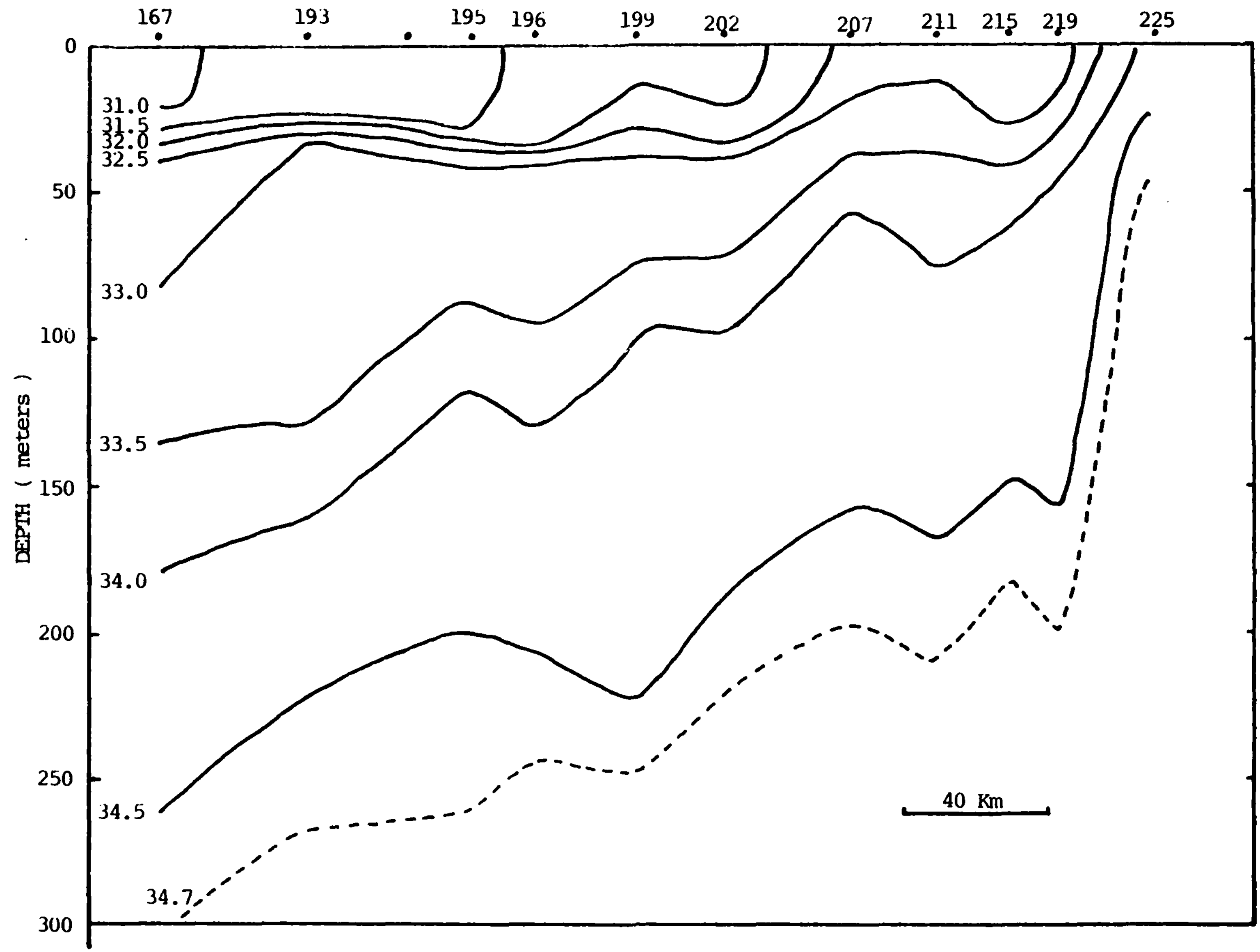

Figure 18. Vertical distribution of salinity (‰) along Belgica Dyb. Line C, Figure 4.

relative temperature maxima (T > -1.5^{o}C) is associated with the pycnocline region. The characteristics of the upper 50 m change significantly between station 202 and 207. Proceeding seaward, surface temperature increases by 0.2^{o}C and salinity increases by about 1.0‰.

Below the Polar Water, warm water (greater than +0.5^{o}C) is found throughout the length of the Dyb. Profiles at Station 202 and seaward show a temperature maximum between 100 and 200 m which is indicated in Figure 17. It appears that fairly warm water, in excess of +1.0^{o}C, presumably from the Return Atlantic Current, is passing under the East Greenland Current and moving up the Dyb to at least Station 199.

4.3.4 North of Belgica Bank

The section along the axis of the trough north of Belgica Bank, line D, Fig. 4, was constructed from Stations 13, 19, 22, 23, 26, 29, 35, 42 and 49 taken between 0800Z 21 August and 2130Z 26 August 1979. The section extends from near the center of the East Greenland Current along a northwesterly line toward Ingolfs Fjord. As evident in Figures 6, 7, 10, and 11 there is a significant cross channel variability in surface layer and Polar Water properties in this region which is reflected in Figures 19 and 20 by the very wavy nature of the isolines. The depth of this trough is generally 300 m, about 100 to 150 m shallower than Belgica Dyb. The 0^{o}C and 34.5‰ isolines deepen somewhat proceeding shoreward along the trough but to a depth of only about 200 m compared with 250 m in Belgica Dyb. Positive near-bottom temperatures are evident through the trough, but significant maxima (greater than +0.75^{o}C) penetrate only to Station 22.

The deeper, more saline temperature minimum can be seen extending between Stations 13 and 22. Two stations (35 and 23) show the lower salinity temperature minimum characteristics of the shelf locations; than -1.75^{o}C with corresponding salinities of 33.25 to 33.3‰. It is possible that these low salinity minima originated from the shallower areas southwest of the trough (also see Figures 10 and 11). At both Station 23 and 35, the low salinity

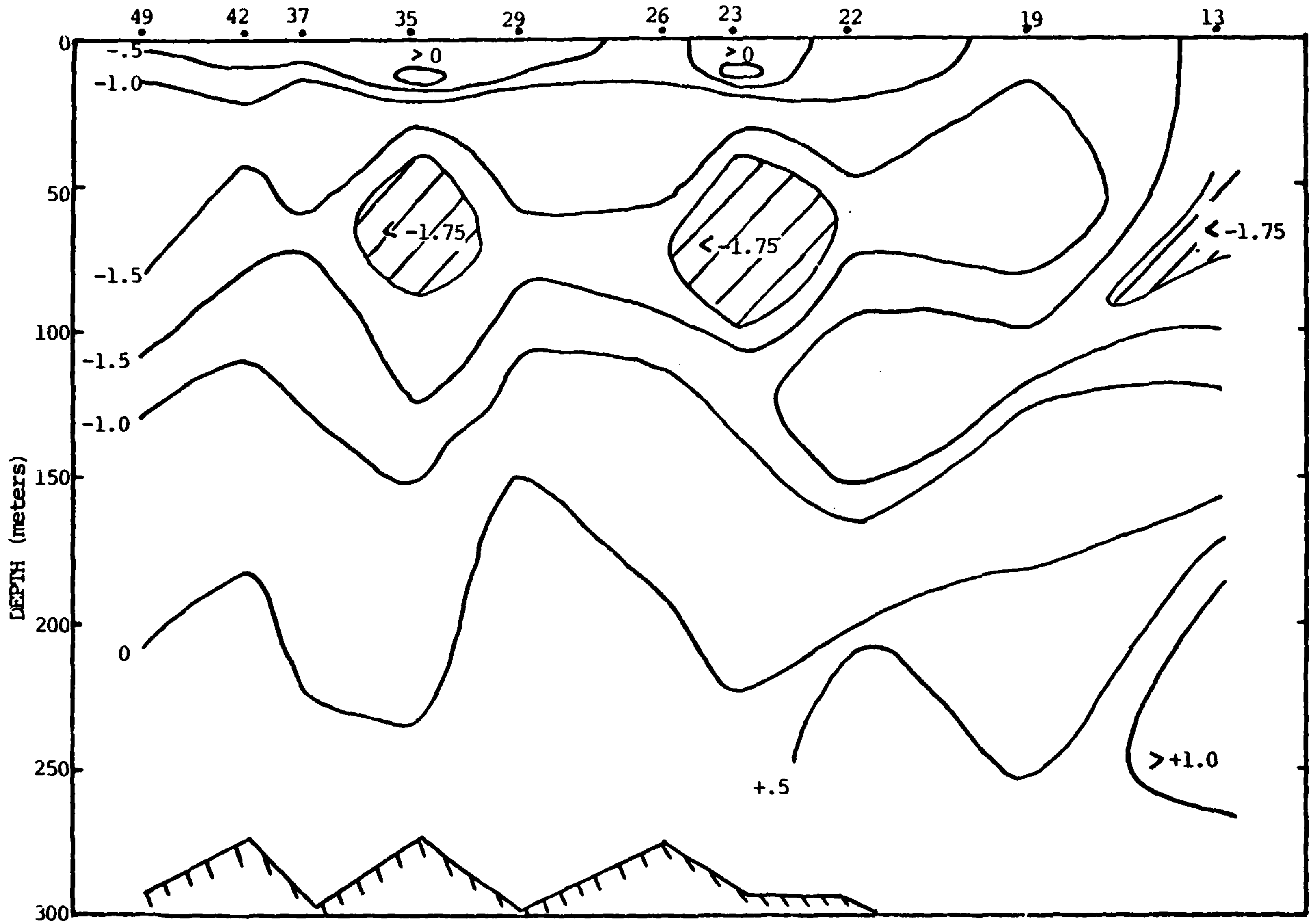

Figure 19. Vertical distribution of temperature (^{0}C) along the trough north of Belgica Bank. Line 0, Figure 4.

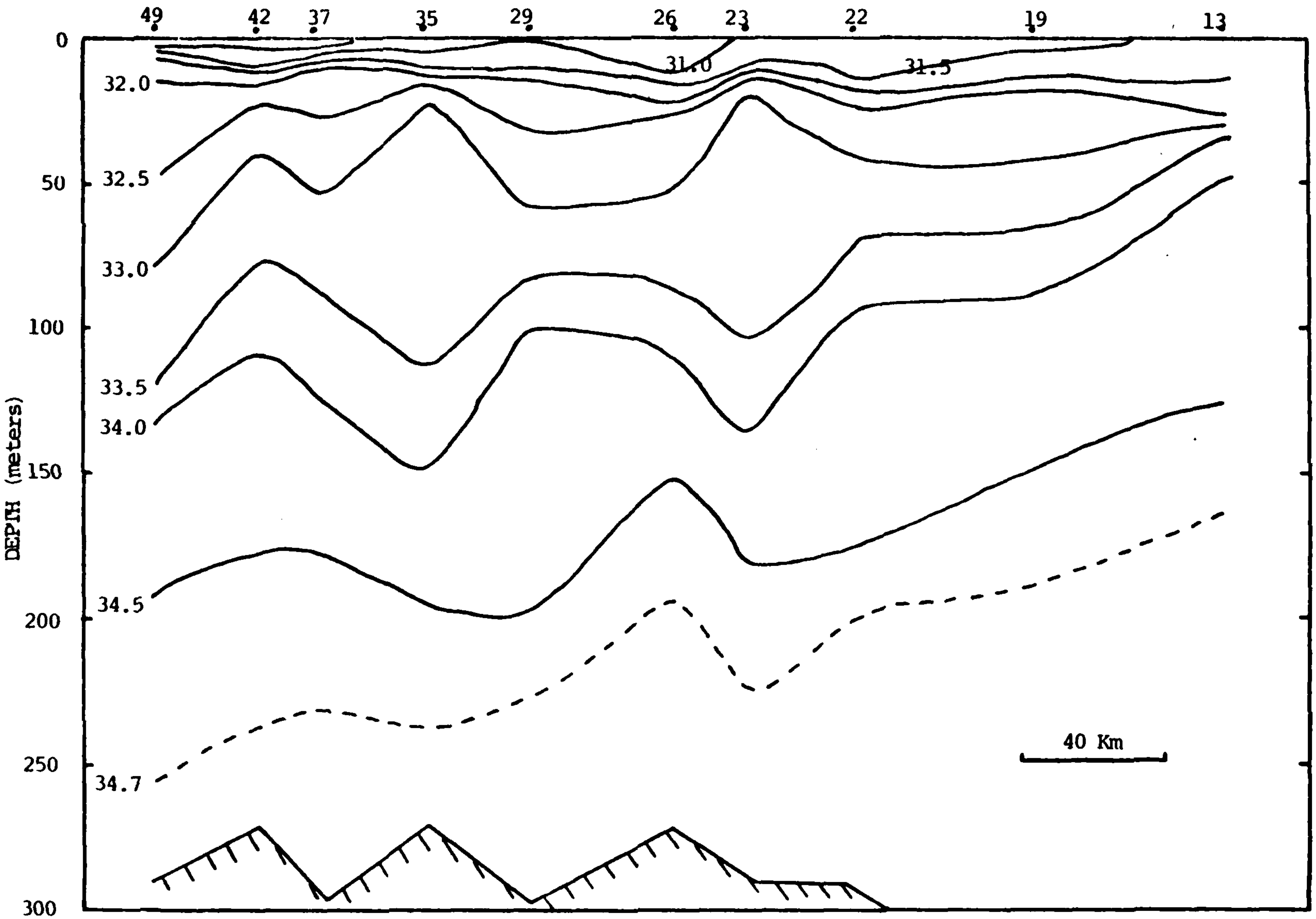

Figure 20. Vertical distribution of salinity (‰) along the trough north of Belgica Bank. Line D, Figure 4.

minima are reflected in the salinity (density) structure as a depression in the isohalines below the minimum (salinity 33.5‰ and greater) and an elevation in the 33.0‰ isohaline.

4.4 Sound Speed Structure

4.4.1 *Introduction*

The preceding sections, which discussed the physical oceanographic characteristics observed during this cruise, indicated four general sub-regions of the study area within which the temperature-salinity structure tended to be fairly coherent. It follows that the sound speed profiles will be similar within each sub-region. The following sections discuss the general sound speed profile characteristics for each of the four regions and qualitatively describes some of the detailed structure which appeared to be of operational significance and common to several stations. This does not imply that these features are predictable, as little is known about seasonal and year-to-year variability.

The speed of sound in seawater is a function of the temperature, salinity and pressure (depth). For the temperature-salinity range encountered in this region, sound speed will increase about 4.6 m/sec per ^{o}C, 1.4 m/sec per ‰ and 1.7 m/sec per 100 m depth increase. Temperature is usually the predominant factor, however salinity will be important in upper layers of the near-shore region and the pressure (depth) term exerts the major influence in the deeper less variable waters.

A typical, smooth, arctic sound speed profile has a minimum at or near the surface with sound speed generally increasing with depth. This results in refractive upward sound propagation paths. Thus, long range, low frequency propagation is via a half deep sound channel with its axis at or near the ocean surface. Perturbations superimposed on this average profile often appear as positive anomalies of limited vertical extent. For example, Station 20 (Appendix A) shows the "half channel" profile with a minimum at the surface

and a positive anomaly of about 4 m/sec between 10 and 25 m. The impact of these anomalies can be estimated from Snells Law. For a source positioned below such a positive anomaly of 2 m/sec in magnitude, rays emanating at an angle of 3^{o} or less from the source will be refracted down by the feature and not reach the surface. For a 4 m/sec positive anomaly, 5^{o} or less rays will be refracted downward. For a source located below a 4 m/sec anomaly such as in Station 20, with a typical positive sound speed gradient below, a subsurface sound channel will exist capable of trapping rays in the 5^{o} cone. These effects are of particular importance to tactical, weapon, and navigation sonar frequencies.

4.4.2 Regional Sound Speed Profiles

Figure 21 compares sound speed profiles from four subregions of the study area which are outlined in Figure 22. Station 72 is typical of the sound speed profiles within Region I which includes stations in the East Greenland Current along the shelf break north of Nord. Sound speed is minimum at the surface and increases monotonically and rather smoothly with depth. The vertical gradient is highest in the 100 to 200 m depth range which corresponds to the transition from the cold Polar to the underlying warmer Atlantic Intermediate Water. Station 165, on the shelf west of Belgica Bank and typical of Region II, is also a fairly smooth profile with the sound speed minimum at the surface. A homogeneous layer of low salinity surface water results in an enhanced vertical sound speed gradient at about 35 m. Sound speed profiles in Region III, the East Greenland Current south of Nord, show more structure (Station 7) and, overall, have a rougher appearance. The influence of the relatively warm water of the Return Atlantic Current at about 250 m often produces a relative sound speed maxima within the Atlantic Intermediate Water layer. Station 3 is probably typical of the sound speed profiles east of the Polar Front (Region IV). In the depth region from about 50 m to about 300 m or more, the depth and temperature effects are canceling which results in a nearly isovelocity layer. Near-surface cooling produces a minima which is underlain by a sharp positive gradient region.

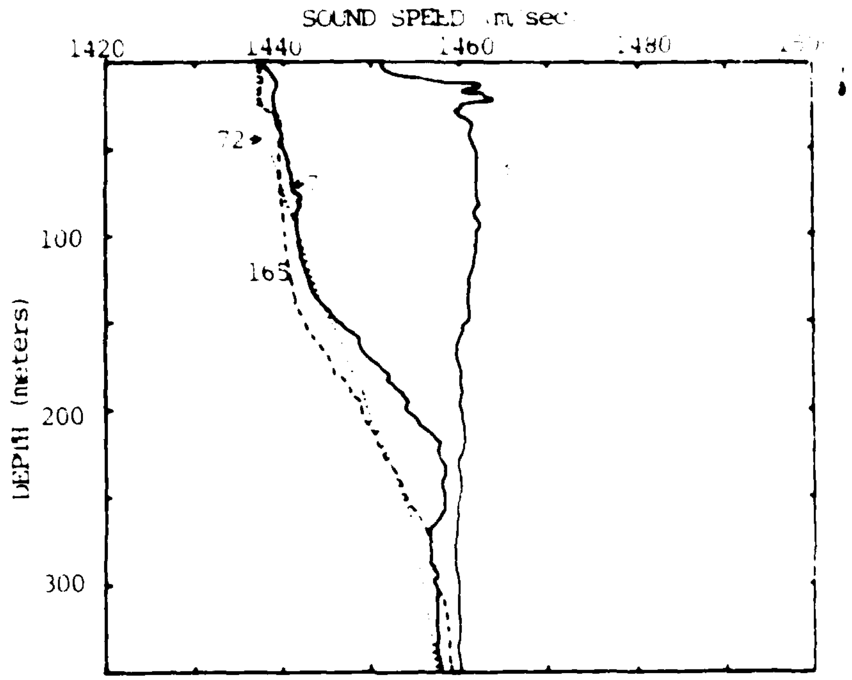

Figure 21. Comparison of sound speed profiles at Stations 3 (Greenland Sea), 7 (East Greenland Current), 165 (East Greenland Shelf) and 72 (East Greenland Current north of Nord).

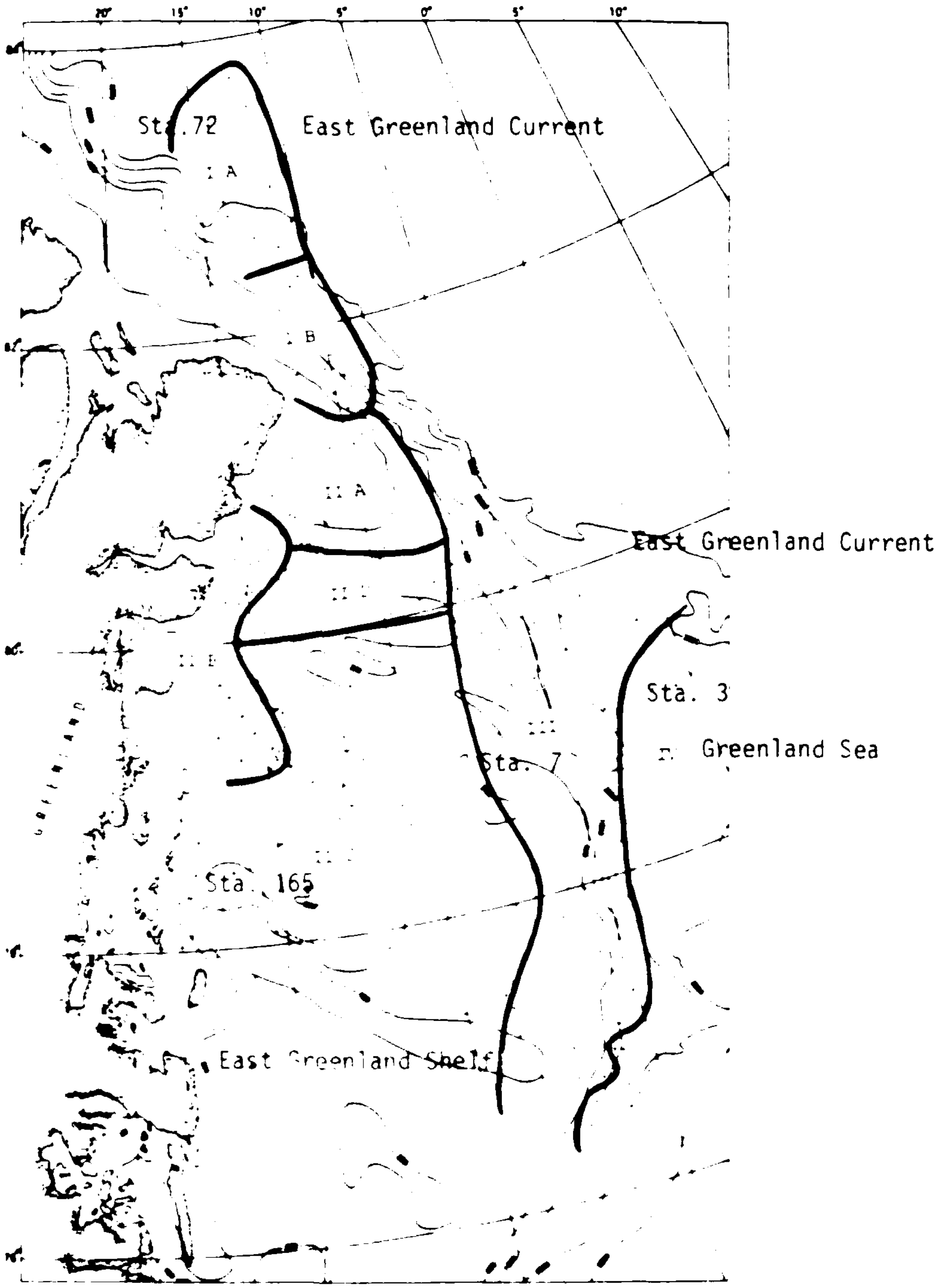

Figure 22. Subregions of the study area for sound speed profile discussion.

The most striking feature of these regional profiles is the difference in the upper layers between Station 3 (Region IV) and the remaining profiles. For example, the sound speed difference between Station 3 and the East Greenland Current profiles typified by Station 7 is in excess of 20 m/sec at the 50 m depth. As this transition takes place across the Polar Front which is very narrow (less than 15 km), a sonar platform will pass quickly from conditions typical of Station 3 to those of Station 7.

4.4.3 Detailed Structure

Superimposed on the basic regional sound speed profiles described above were certain smaller scale features which appeared to occur at several stations and, further, seemed to be of operational importance. These were examined in a qualitative manner by tabulating the positive anomalies of greater than 1 m/sec from the sound speed profiles. On a region by region basis, stations with a particular characteristic anomaly were identified. Persistent and similar anomalies often seemed to form subclasses of the basic profiles. These regions are sketched in Figure 22 and the anomalies are discussed below.

Within Region I, the East Greenland Current north of Nord, two subsets were identified (Figure 22). Within Subregion IA all profiles had a minimum at the surface. Proceeding south toward Ob Bank, Region IB profiles displayed a subsurface sound speed minima at 40 to 50 m, a result of near-surface warming in this region (Figure 6) which elevated the sound speed at the surface by 2-4 m/sec. In subregion IB, rays directed upward at less than 3 to 5^{0} from the horizontal would not reach the water-ice surface. A sound channel centered at about 40 m is formed which can trap a ± 3 to $\pm 5^{0}$ cone of sound energy which would not interact with the underside of the ice.

Within Region II, the Continental Shelf area, four subregions having persistent structural features were identified. Subregion IIA covers the shallow area of Ob Bank and the Northern half of the trough between Belgica and Ob Bank. No significant anomolous features were identified in this region.

Apparently, lateral interaction of water masses in this area is minimized or perhaps enhanced vertical mixing in the shallows of Ob Bank effectively destroys such features.

Subregion IIB profiles are confined to the near-shore area, and display a strong near-surface positive gradient. Station 94 (Appendix) is an example of detailed sound speed structure in this region. At stations within IIB, the effect of the very low, near-surface salinities (28 to 30‰) overcome the warm temperature influence which results in a very low surface sound speed and thus a high positive gradient in the upper few meters.

Stations within Subregion IIC had a fairly homogeneous low salinity surface layer. The impact on the sound speed profile is typified by station 137 (Appendix). From the minimum at the surface to about 30-40 m, sound speed increases mainly as a function of pressure (depth). At the halocline, sound speed increases rather abruptly by 2-4 m/sec. A slight temperature maximum associated with the halocline often results in a positive anomaly of 1-2 m/sec at 30-40 m.

Subregion IID profiles typically displayed a surface or near-surface maximum of 1.5 to 4 m/sec. As discussed above, such near-surface maxima can refract energy down, preventing sound from reaching the ice and if a positive gradient exists at depth may form a subsurface sound channel free from ice-sound interactions.

Region III encompasses the East Greenland Current south of Nord. Discussions in the previous section indicated that this is an area of complex lateral water mass interaction. This is reflected in the sound speed profiles. Station 12 (Appendix) displays several sound speed anomalies at various depths. These include: 1) near-surface warming which increases the surface velocity, 2) a temperature-sound speed maxima at 40 m, 3) various maxima/minima at 100-125 m in the depth region of the high salinity temperature minima, and 4) maxima associated with the warmer Return Atlantic Current between 200 and 270 m. Most profiles with Region III show at least one or two of these anomalies.

Region IV, the transition area between the East Greenland Current and the Greenland Sea Water masses has the most significant anomalies of any of the areas. Along this boundary, which is basically the region of the Polar Front, anomalies in the near surface waters greater than 5 m/sec occur at each station.

4.5 Summary of Preliminary Oceanographic Results

The near-surface horizontal temperature and salinity distributions (Figures 6 and 7) suggest a westward surface flow across the continental shelf south of Belgica Bank (over Belgica Dyb between 77°N and 78°N) and an eastward surface flow north of Belgica Bank between 80°N and 81°N. These distributions are thus consistent with an anticyclonic surface flow around Belgica Bank. Warm (> 0°C) deep water appears to move shoreward along Belgica Dyb ~~(Figure 17)~~ and perhaps north of Belgica Bank ~~(Figure 19)~~ and is found in the deep along-shore troughs (Figure 12).

Polar Water temperature minimum characteristics, while uniform within local geographic areas, showed significant large scale variations (Figure 8 through 11). Particular differences could be found between the continental shelf area and the East Greenland Current north and south of Nord. Sections across the East Greenland Current (i.e. Figures 15 through 18) indicate that often two of these minima can be identified and that they are coherent over several stations.

Gross sound speed structure appears uniform over fairly large geographic regions (Figures 20 and 21). Even small scale anomalies, such as associated with temperature inversions, were often coherent over several 100's of km.

REFERENCES

1. Becker, P. 1977. LP's all at Sea: The Other Man's CTD. Proceedings of Fourth STD/Ocean Systems Conference, January 19-21, 1977, San Diego. Plessey Environmental Systems, 147 pp.

2. UNESCO, 1966. Table 1, in International Oceanographic Tables, National Institute of Oceanography of Great Brittian and UNESCO, Paris.

3. Wilson, W.D., 1960. Equation of Speed of Sound in Sea Water. Journal Acoustical Society of America, 32:1357.

4. Aagaard, K. and L.K. Coachman, 1968. The East Greenland Current North of Denmark Strait: Parts I and II. Arctic 21(3):181-200 and 21(4):268-290.

5. Doherty, B. and D. Kester, 1974. The Freezing Point of Seawater. J. Mar. Res. 32(2):285-300.

Appendix A: Station Data and Vertical Profiles of Temperature, Salinity, Sound Speed and Sigma-T.

STATION NUMBER: A sequential numerical identification of CTD stations. The suffix A, B, C, etc. indicate successive, CTD casts at the same station (location) for sensor inter comparisons. The suffix H indicates that the cast was taken from the helicopters.

DATE/TIME: Greenwich Mean Time of station.

POSITION: In degrees - minutes and tenths of minutes.

DEPTH: Water depth in meters.

WIND: Dir: In ^{o}T SPD: In knots

BAR: Barometric pressure in millibars

AIR TEMP: In ^{o}C.

CLOUDS: Total cloud amount in eighths.

VISIBILITY: Coded Visibility

90:	less than 50 yds.	95:	1 - 2 n. mi.
91:	50 to 200 yds.	96:	2 to 5 n. mi.
92:	200 yds. to 1/4 n. mi.	97:	5 to 10 n. mi.
93:	1/4 to 1/2 n. mi.	98:	10 to 25 n. mi.
94:	1/2 to 1 n. mi.	99:	25 n. mi. or more

2. Explanation of Vertical Property Profiles

The stations are presented in numerical order. The Date-Time (GMT), Station Number, Position and Bottom Depth are repeated at the top of each figure. Values versus depth (in meters) are plotted as follows:

T: Temperature (^{o}C)
V: Sound Speed (m/sec); WILSON, 1960 (Reference 3)
S: Salinity (‰)
D: Sigma -T.

APPENDIX A
PART I

CTD STATION DATA

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
1	19 Aug 79	1600	79-05.0N	00-00.0W	x	190	17	1020.4	3.6	8	95
2	19 Aug 79	1730	79-04.6N	00-46.1W	x	190	16	1020.3	5.3	8	96
3	19 Aug 79	1900	79-05.9N	01-32.2W	2597	185	15	1020.1	4.6	8	95
4	19 Aug 79	2000	79-05.1N	02-29.8W	2469	185	14	1019.9	4.1	8	94
5	19 Aug 79	2300	79-03.9N	03-18.6W	2249	180	13	1019.0	1.2	8	93
6	20 Aug 79	0315	79-03.3N	04-23.3W	1737	180	13	1018.1	1.0	8	93
7	20 Aug 79	0525	79-02.4N	05-18.2W	1170	180	13	1017.2	0.9	9	93
8	20 Aug 79	1120	79-05.8N	06-16.6W	440	180	7	1018.1	2.9	9	92
9	20 Aug 79	1445	79-06.3N	06-57.9W	238	185	9	1018.4	1.7	9	93
10	20 Aug 79	1845	79-10.6N	06-11.1W	411	190	11	1018.6	0.6	8	93
11	21 Aug 79	0225	79-18.3N	05-19.3W	951	135	7	1019.6	0.8	9	93
12	21 Aug 79	0350	79-22.4N	05-10.0W	1189	135	7	1019.3	1.2	9	92
13	21 Aug 79	0810	79-30.3N	03-54.8W	1975	130	9	1019.4	1.0	9	92
14	21 Aug 79	1225	79-32.8N	03-11.3W	2251	120	12	1020.0	0.2	9	92
15	21 Aug 79	1717	79-32.7N	01-10.9W	2745	130	8	1020.1	0.6	9	92
16	22 Aug 79	0715	79-49.2N	02-50.9W	2688	190	11	1019.0	1.8	9	93
17	22 Aug 79	1305	79-44.1N	03-41.1W	2140	200	10	1019.2	1.9	9	93
18A	22 Aug 79	1655	79-44.5N	04-37.8W	1463	185	8	1018.5	1.5	9	93
18B	22 Aug 79	1750	79-44.6N	04-36.2W	1463	180	7	1018.3	1.4	9	93
19	23 Aug 79	1041	79-37.0N	05-20.1W	759	210	7	1016.3	0.3	9	94
20	23 Aug 79	1315	79-38.9N	06-17.3W	293	210	7	1015.8	0.4	9	94
21	23 Aug 79	1646	79-46.2N	06-45.2W	421	180	6	1014.9	0.6	9	93
22	23 Aug 79	2035	79-55.3N	06-31.9W	293	205	8	1013.2	0.8	9	93
23	23 Aug 79	2355	80-07.7N	07-08.9W	293	230	10	1011.7	1.1	9	94
24	24 Aug 79	0230	80-23.0N	06-25.9W	289	215	10	1010.6	0.5	8	95

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
25	24 Aug 79	0445	80-16.0N	07-00.8W	274	205	10	1009.9	0.2	8	95
26	24 Aug 79	0750	80-11.1N	07-59.3W	274	200	10	1009.7	-0.2	8	94
27	24 Aug 79	0913	80-05.8N	08-35.0W	219	200	10	1009.8	-0.2	8	94
28A	24 Aug 79	1100	80-02.6N	09-47.4W	86	200	10	1010.0	-0.4	9	93
28B	24 Aug 79	1115	80-02.6N	09-47.4W	86	200	10	1010.0	-0.4	9	93
29	24 Aug 79	1345	80-15.4N	09-23.3W	302	200	5	1010.6	-0.1	9	93
30	24 Aug 79	1624	80-28.6N	09-26.7W	238	-	0	1011.1	0.3	9	93
31	24 Aug 79	1800	80-23.7N	09-51.7W	238	-	0	1011.6	0.6	9	92
32	24 Aug 79	2005	80-33.3N	08-46.6W	260	-	0	1012.2	1.0	8	94
33	25 Aug 79	0000	80-41.1N	08-18.9W	46	-	0	1012.5	1.7	7	96
34	25 Aug 79	0810	80-26.0N	09-37.7W	265	340	6	1014.2	-1.7	3	96
35	25 Aug 79	1000	80-18.1N	10-26.3W	274	345	8	1015.0	-2.0	3	95
36	25 Aug 79	1140	80-11.8N	11-26.5W	141	350	9	1015.8	-2.3	0	94
37	25 Aug 79	1320	80-23.6N	11-19.2W	302	000	10	1016.0	-2.2	0	94
38	25 Aug 79	1509	80-33.6N	10-58.6W	265	030	11	1016.3	-2.0	8	95
39	25 Aug 79	1845	80-46.0N	10-00.0W	274	050	11	1016.9	-1.6	8	96
40	25 Aug 79	2232	80-42.5N	11-22.8W	110	-	0	1016.6	-1.6	2	95
41	26 Aug 79	0010	80-32.9N	11-46.1W	265	-	0	1016.5	-1.6	2	95
42A	26 Aug 79	0410	80-25.2N	11-58.7W	274	220	6	1016.2	-0.8	0	96
42B	26 Aug 79	0420	80-25.2N	11-58.7W	274	220	6	1016.2	-0.8	0	96
43A	26 Aug 79	0545	80-18.8	12-36.9	183	220	6	1016.1	-0.4	0	97
43B	26 Aug 79	0600	80-18.8	12-36.9	183	220	6	1016.1	-0.4	0	97
44	26 Aug 79	0810	80-27.0N	12-06.8W	265	210	6	1016.1	-0.3	0	97
45	26 Aug 79	1005	80-37.6N	11-58.7W	256	210	5	1016.1	-0.1	0	97
46	26 Aug 79	1145	80-42.2N	11-31.5W	155	200	5	1016.1	0.0	0	97

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
47	26 Aug 79	1510	80-50.4N	10-56.7W	165	215	5	1016.0	0.5	0	98
48	26 Aug 79	2010	80-42.9N	11-23.6W	137	230	5	1016.3	0.3	0	98
49	26 Aug 79	2138	80-35.8N	12-23.9W	293	225	6	1016.5	-0.3	0	98
50	27 Aug 79	0106	80-24.7N	13-36.6W	274	225	5	1016.9	-1.2	2	98
51	27 Aug 79	0230	80-30.2N	14-25.2W	311	225	4	1017.1	-1.2	3	97
52	27 Aug 79	0535	80-35.1N	13-19.4W	256	230	1	1017.5	-1.3	3	97
53A	27 Aug 79	0830	80-45.9N	13-18.6W	132	310	4	1018.6	-1.3	3	97
53B	27 Aug 79	0840	80-45.9N	13-18.6W	132	310	4	1018.6	-1.3	3	97
54	27 Aug 79	1040	80-48.1N	12-48.1W	82	310	4	1019.0	-1.3	3	97
55	27 Aug 79	1300	80-55.6N	12-36.8W	44	310	2	1019.4	-1.3	7	97
56	27 Aug 79	1516	81-02.6N	11-41.8W	73	-	0	1019.0	1.4	7	97
57	27 Aug 79	2120	81-12.0N	10-42.9W	61	-	0	1019.0	3.0	7	97
58	27 Aug 79	2306	81-12.7N	09-43.3W	64	-	0	1019.5	2.9	9	93
59	28 Aug 79	0230	81-15.2N	09-18.9W	110	-	0	1021.0	1.6	9	93
60	28 Aug 79	0340	81-23.3N	09-40.2W	137	-	0	1021.4	1.3	8	97
61	28 Aug 79	0505	81-32.3N	10-00.5W	311	-	0	1021.9	0.9	6	97
62	28 Aug 79	0700	81-42.5N	10-20.8W	393	-	0	1022.9	0.3	6	97
63	28 Aug 79	0815	81-52.8N	10-20.9W	2194	-	0	1023.5	0.1	6	95
64	28 Aug 79	1025	82-04.3N	11-12.7W	512	130	5	1024.3	-0.5	9	93
65	28 Aug 79	1325	82-21.4N	10-41.2W	2743	130	6	1026.0	-1.0	9	93
66	28 Aug 79	1517	82-34.6N	11-12.0W	2835	135	7	1026.2	-1.2	9	94
67	28 Aug 79	1725	82-38.5N	12-12.4W	2560	150	9	1027.0	-2.4	9	94
68	28 Aug 79	2200	82-49.6N	13-32.8W	2542	155	10	1027.1	-2.8	9	93
69	29 Aug 79	0240	82-55.8N	13-42.7W	1929	150	7	1026.7	-2.9	9	93
70	29 Aug 79	0635	83-02.3N	14-35.8W	3109	140	4	1026.0	-2.4	4	96

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
71	29 Aug 79	1030	83-10.7N	14-55.3W	3274	140	7	1025.3	-0.6	6	96
72	29 Aug 79	1400	83-24.0N	14-02.3W	3383	140	9	1024.8	-0.2	8	96
73	29 Aug 79	1847	83-44.4N	12-24.4W	3658	140	11	1024.4	-0.6	8	94
74	29 Aug 79	2359	83-21.1N	11-47.0W	3383	140	21	1024.8	-0.6	8	95
75	30 Aug 79	0315	83-13.8N	11-45.2W	3429	120	16	1024.4	-1.2	8	95
76	30 Aug 79	0640	82-57.6N	11-17.1W	3164	100	12	1024.0	-1.7	8	96
77	30 Aug 79	0934	82-42.2N	10-31.2W	2871	090	13	1024.1	-1.8	8	96
78	30 Aug 79	1322	82-16.7N	11-01.0W	2460	085	14	1024.1	-1.1	8	96
79	30 Aug 79	1530	82-02.1N	11-45.3W	201	090	13	1024.0	-0.7	7	97
80A	30 Aug 79	1745	81-42.0N	11-32.6W	174	100	11	1023.6	0.3	7	97
80B	30 Aug 79	1745	81-42.0N	11.32.6W	174	100	11	1023.6	0.3	7	97
81	30 Aug 79	2019	81-38.6N	09-28.8W	1189	100	12	1023.9	0.3	7	97
82	30 Aug 79	2335	81-21.6N	09-15.1W	192	100	14	1024.5	0.2	7	97
83	31 Aug 79	0405	81-05.6N	10-14.1W	46	095	10	1026.0	0.6	8	96
84	31 Aug 79	0830	81-08.9N	11-06.5W	47	070	10	1027.9	0.1	8	96
85	31 Aug 79	1130	81-10.2N	12-19.1W	18	050	11	1029.0	-0.5	8	96
86	31 Aug 79	1500	81-02.0N	11-39.4W	73	045	11	1029.2	0.0	8	96
87	31 Aug 79	1630	81-53.1N	11-38.9W	229	040	10	1029.3	0.2	8	96
88	31 Aug 79	1800	80-55.7N	12-18.9W	91	040	10	1029.5	0.6	8	96
89	31 Aug 79	2000	80-57.1N	13-14.1W	24	045	9	1030.1	0.6	8	96
90	31 Aug 79	2150	80-46.9N	12-43.3W	88	045	9	1030.6	0.6	8	96
91	31 Aug 79	2335	80-36.7N	12-37.3W	278	050	8	1031.2	0.6	8	96
92	01 Sep 79	0045	80-41.7N	13-13.4W	174	045	8	1031.3	0.4	8	96
94	01 Sep 79	0535	80-35.0N	13-54.5W	135	02	6	1031.7	-0.3	8	96
95	01 Sep 79	0705	80-27.1N	13-21.3W	293	020	7	1031.8	0.4	8	96

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
96	01 Sep 79	0830	80-32.0N	14-19.3W	238	025	8	1032.0	1.5	7	96
97	01 Sep 79	1007	80-36.0N	15-21.5N	27	025	9	1032.2	2.5	6	96
98	01 Sep 79	1315	80-21.7N	14-59.0W	274	030	10	1032.3	3.0	6	96
99	01 Sep 79	1447	80-10.3N	14-19.6W	238	040	9	1031.7	1.5	6	96
100	01 Sep 79	1633	80-15.6N	15-24.0W	293	050	9	1031.5	0.4	7	96
101	01 Sep 79	1835	80-16.9N	15-51.1W	183	060	8	1031.1	-0.7	7	96
102	01 Sep 79	2055	80-24.6N	15-15.3W	214	150	6	1031.2	0.2	7	76
103	01 Sep 79	2300	80-34.2N	15-17.7W	124	250	6	1031.2	0.9	8	96
104	02 Sep 79	0020	80-41.8N	14-55.2W	37	250	6	1031.2	0.9	8	96
105	02 Sep 79	0235	80-31.0N	14-55.2W	37	250	5	1031.3	1.2	8	96
106A	02 Sep 79	0410	80-20.3N	14-46.7W	316	000	12	0129.7	0.5	8	97
106B	02 Sep 79	0410	80-20.3N	14-46.7W	316	000	12	1029.7	0.5	8	97
107	02 Sep 79	0555	80-11.1N	14-06.0W	183	030	15	1029.2	0.3	8	98
108	02 Sep 79	0730	80-10.7N	15-15.4W	375	025	15	1029.1	0.7	8	98
109	02 Sep 79	0930	80-01.5N	15-32.7W	366	020	15	1029.1	1.2	7	98
110	02 Sep 79	1045	79-54.4N	15-30.8W	274	015	15	1029.0	1.5	7	98
111	02 Sep 79	1839	80-03.1N	14-27.7W	119	000	10	1028.3	-0.3	7	98
112	02 Sep 79	2110	79-52.0N	14-17.8W	58	101	9	1028.3	1.7	7	98
113A	03 Sep 79	000	79-40.7N	14-16.5W	101	020	7	1028.2	3.8	8	98
113B	03 Sep 79	000	79-40.7N	14-16.5W	101	020	7	1028.2	3.8	8	98
114	03 Sep 79	0410	79-30.9N	14-30.4W	85	015	8	1027.4	-0.6	5	97
115	03 Sep 79	1000	79-20.0N	14-36.4W	42	010	9	1027.0	-1.4	8	96
116	03 Sep 79	1500	79-16.3N	14-34.8W	38	000	10	1026.3	0.0	5	46
117	04 Sep 79	0040	79-14.9N	14-35.2W	65	350	13	1024.9	0.6	8	96
118A	04 Sep 79	1155	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
118B	04 Sep 79	1211	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118C	04 Sep 79	1216	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118D	04 Sep 79	1221	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118E	04 Sep 79	1226	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118F	04 Sep 79	1231	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118G	04 Sep 79	1236	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118H	04 Sep 79	1301	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118I	04 Sep 79	1345	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118J	04 Sep 79	1506	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
118K	04 Sep 79	1515	79-13.6N	14-35.2W	64	000	9	1024.2	-1.2	8	93
119H	05 Sep 79	1000	79-44.2N	16-22.5W	X	X	X	X	X	X	X
120H	05 Sep 79	1030	79-38.6N	16-04.5W	X	X	X	X	X	X	X
121	05 Sep 79	2225	79-16.3N	14-23,5W	73	010	8	1024.3	-1.3	8	94
122	06 Sep 79	0225	79-24.6N	14-15.3W	84	000	8	1024.0	-1.7	8	94
123	06 Sep 79	0530	79-29.9N	14-16.3W	110	350	8	1023.5	-1.7	8	95
124	06 Sep 79	0745	79-31.4N	14-20.0W	119	340	7	1023.2	-1.3	8	95
125	06 Sep 79	1819	79-29.9N	14-30.9W	97	270	5	1022.3	1.1	8	96
126	07 Sep 79	2125	79-32.3N	14-37.2W	82	015	3	1020.7	-3.1	7	97
127	08 Sep 79	1225	79-32.3N	14-37.4W	82	200	3	1012.6	-3.4	8	96
128	08 Sep 79	2210	79-32.3N	14-37.4W	82	175	12	1002.6	-3.4	7	97
129	09 Sep 79	1315	79-32.4N	14-37.2W	82	350	8	998.8	-8.0	3	97
130	09 Sep 79	1810	79-32.2N	14-33.9W	78	010	15	997.4	-3.3	8	95
131A	10 Sep 79	1455	79-32.1N	14-34.0W	78	020	15	1003.7	-4.2	3	97
131B	10 Sep 79	1521	79-32.1N	14-34.0W	78	020	15	1003.7	-4.2	3	97
132	11 Sep 79	0715	79-32.9N	14-10.3W	100	340	20	1005.4	-4.7	8	92

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
133	12 Sep 79	0720	79-37.9N	13-26.5W	155	000	19	1007.3	-2.8	7	96
134	12 Sep 79	0925	79-39.7N	12-42.4W	165	350	18	1007.4	-2.8	7	96
135	12 Sep 79	1115	79-37.2N	11-41.0W	8	X	X	X	X	X	X
136	12 Sep 79	1330	79-30.6N	12-37.8W	210	030	21	1007.3	-2.6	7	96
137	12 Sep 79	1500	79-18.3N	12-13.6W	176	055	25	1007.3	-2.5	7	96
138	12 Sep 79	1830	79-08.0N	11-40.0W	219	090	31	1007.3	-2.3	8	95
139	12 Sep 79	2016	79-12.8N	12-15.6W	146	060	27	1008.4	-2.5	8	95
140	12 Sep 79	2200	79-03.8N	11-54.1W	366	035	22	1009.5	-2.7	8	96
141A	12 Sep 79	2350	78-59.0N	12-30.8W	165	010	18	1010.4	-2.8	8	96
141B	12 Sep 79	2350	78-59.0N	12-30.8W	165	010	18	1010.4	-2.8	8	96
142A	13 Sep 79	0200	78-53.0N	13-11.0W	141	010	14	1011.1	-3.2	8	96
142B	13 Sep 79	0215	78-53.0N	13-11.0W	141	010	14	1011.1	-3.2	8	96
143	13 Sep 79	0655	78-54.0N	13-56.0W	146	000	6	1012.5	-3.9	7	96
144H	13 Sep 79	1346	79-22.1N	16-41.0W	X	X	X	X	X	X	X
145H	13 Sep 79	1410	79-14.4N	15-46.0W	X	X	X	X	X	X	X
146H	13 Sep 79	1430	79-09.0N	14-53.0W	X	X	X	X	X	X	X
147H	13 Sep 79	1655	79-31.0N	15-48.0W	X	X	X	X	X	X	X
148H	13 Sep 79	1710	79-23.8N	15-22.0W	X	X	X	X	X	X	X
149H	13 Sep 79	1730	79-17.5N	14-43.0W	X	X	X	X	X	X	X
150H	13 Sep 79	1740	79-09.2N	14-06.0W	X	X	X	X	X	X	X
151H	13 Sep 79	1750	79-02.3N	13-30.0W	X	X	X	X	X	X	X
152	13 Sep 79	2340	78-47.0N	14-34.3W	61	200	3	1013.9	-1.1	2	95
153	14 Sep 79	0350	78-39.5N	14-45.9W	73	110	4	1014.0	-9.1	6	95
154	14 Sep 79	0750	78-39.0N	14-58.1W	61	110	4	1014.8	-13.2	6	97
155	14 Sep 79	1127	78-30.8N	16-00.5W	192	200	4	1016.0	-13.0	5	97

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USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
156H	14 Sep 79	1610	78-42.5N	17-34.0W	X	X	X	X	X	X	X
157H	14 Sep 79	1700	78-30.0N	16-35.0W	X	X	X	X	X	X	X
158	15 Sep 79	0000	78-20.7N	15-41.6W	210	280	5	1016.7	-11.2	2	97
159H	15 Sep 79	1100	78-30.0N	17-47.0W	X	X	X	X	X	X	X
160H	15 Sep 79	1130	78-20.0N	18-19.0W	X	X	X	X	X	X	X
161H	15 Sep 79	1200	78-22.0N	18-05.0W	X	X	X	X	X	X	X
162H	15 Sep 79	1545	78-05.0N	18-01.0W	X	X	X	X	X	X	X
163H	15 Sep 79	1605	78-12.0N	18-22.5W	X	X	X	X	X	X	X
164H	15 Sep 79	1645	78-02.3N	18-19.0W	X	X	X	X	X	X	X
165	15 Sep 79	2100	78-16.8N	17-00.7W	439	295	4	1015.1	-7.5	2	97
166	16 Sep 79	0015	78-06.1N	17-16.0W	558	310	4	1014.8	-12.2	3	97
167	16 Sep 79	0230	77-56.9N	17-20.2W	549	315	9	1014.1	-10.0	3	97
168	16 Sep 79	0545	77-44.9N	16-21.0W	293	320	14	1013.4	-7.8	3	97
169	16 Sep 79	0810	77-37.2N	17-31.5W	43	320	15	1012.9	-7.1	3	97
170	16 Sep 79	1020	77-28.8N	17-37.4W	366	320	15	1012.5	-6.5	4	97
171	16 Sep 79	1340	77-19.8N	17-50.8W	256	320	16	1010.8	-5.1	5	97
172	16 Sep 79	1520	77-09.5N	17-36.4W	216	320	16	1000.2	-4.9	6	97
173	16 Sep 79	1745	76-59.6N	17-43.8W	265	320	17	1008.5	-3.9	8	97
174	16 Sep 79	2220	76-49.2N	17-24.9W	274	315	19	1006.0	-3.6	9	94
175	17 Sep 79	0035	76-42.1N	17-51.3W	274	310	20	1004.7	-3.4	9	94
176	17 Sep 79	0335	76-30.2N	18-05.8W	91	305	17	1002.6	-2.3	9	94
177	17 Sep 79	0510	76-36.1N	18-24.3W	316	300	16	1001.2	-2.0	8	93
178	17 Sep 79	0930	76-38.9N	17-30.5W	210	350	10	1000.6	-2.8	8	93
179	17 Sep 79	1155	76-42.6N	18-18.5W	210	040	8	1000.0	-2.0	8	94
180	17 Sep 79	1316	76-36.2N	18-14.1W	229	350	9	999.6	-1.7	8	94

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
181	17 Sep 79	1422	76-36.5N	18-01.1W	219	350	11	999.2	-1.3	8	95
182	17 Sep 79	1640	76-46.0N	18-00.0W	366	320	13	998.0	-.6	8	96
183	17 Sep 79	1911	76-48.1N	16-59.0W	183	325	13	997.6	0.1	8	96
184A	17 Sep 79	2150	76-56.8N	17-38.8W	265	340	13	997.3	0.4	9	94
184B	17 Sep 79	2200	76-56.8N	17-38.8W	265	340	13	997.3	0.4	9	94
185	18 Sep 79	0320	77-07.9N	17-24.6W	210	345	14	996.6	0.3	8	93
186	18 Sep 79	0700	77-14.8N	16-34.5W	146	350	16	996.6	0.0	8	92
187	18 Sep 79	0850	77-26.6N	16-34.4W	90	005	15	997.3	0.1	8	92
188	18 Sep 79	1255	77-32.4N	16-46.8W	311	030	14	998.6	-0.2	8	92
189	18 Sep 79	1726	77-42.3N	16-48.6W	310	020	20	999.5	-2.0	8	96
190	18 Sep 79	2320	77-49.4N	16-13.3W	421	340	15	998.6	-2.2	9	93
191	19 Sep 79	0300	77-57.2N	15-44.2W	501	335	17	997.4	-2.0	8	92
192	19 Sep 79	1235	78-05.5N	15-22.6W	411	330	36	996.1	-1.7	8	91
193	20 Sep 79	1545	77-50.4N	15-05.9W	457	005	23	1005.3	-1.5	8	93
194	20 Sep 79	1955	77-43.2N	13-52.5W	366	015	23	1005.6	-1.6	8	93
195	20 Sep 79	2123	77-38.5N	13-05.5W	375	015	20	1005.6	-1.6	8	93
196	20 Sep 79	2300	77-37.8N	12-12.8W	347	020	18	1005.6	-1.5	9	95
197	21 Sep 79	0100	77-44.7N	11-33.5W	219	010	17	1005.7	-1.6	9	95
198	21 Sep 79	0320	77-33.5N	11-33.9W	411	000	16	1005.9	-1.7	8	95
199	21 Sep 79	0605	77-23.3N	11-18.6W	439	340	15	1006.2	-2.0	8	95
200	21 Sep 79	0835	77-12.9N	11-37.6W	366	000	12	1006.4	-2.1	8	95
201	21 Sep 79	1139	77-14.9N	10-42.4W	457	020	9	1006.7	-2.1	7	96
202	21 Sep 79	1445	77-19.9N	10-04.3W	311	015	10	1006.6	-2.2	8	94
203	21 Sep 79	1900	77-21.8N	09.19.3W	274	005	11	1006.5	-2.1	9	93
204	21 Sep 79	2050	77-25.2N	08-52.8W	274	350	13	1006.2	-2.0	8	93

CTD STATION DATA; ARCTIC EAST 1979

USCGC WESTWIND

STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
205	21 Sep 79	2245	77-29.9N	08-32.0W	272	345	15	1005.9	-1.9	8	93
206	22 Sep 79	0325	77-19.1N	08-38.6W	274	305	13	1005.9	-2.4	8	94
207	22 Sep 79	0525	77-09.0N	08-40.5W	293	275	12	1006.0	-2.7	8	95
208	22 Sep 79	0715	76-58.0N	08-43.3W	338	265	11	1006.2	-2.8	8	95
209	22 Sep 79	0935	76-43.8N	08-45.4W	320	255	10	1006.7	-2.4	8	96
210	22 Sep 79	1433	76-51.4N	08-19.5W	357	240	7	1007.5	-0.7	8	96
211	22 Sep 79	1702	76-58.4N	07-56.1W	311	240	6	1007.6	0.2	7	96
212	22 Sep 79	1843	77-07.3N	07-35.5W	274	220	7	1007.6	0.8	7	96
213	22 Sep 79	1946	77-10.6N	07-18.7W	267	200	9	1007.6	1.4	7	96
214	22 Sep 79	2130	77-00.2N	07-17.4W	265	180	10	1007.5	2.7	9	95
215	22 Sep 79	2320	76-48.0N	07-19.0W	302	170	12	1007.5	3.4	9	94
216A	23 Sep 79	0130	76-37.8N	07-21.3W	421	160	10	1007.9	2.2	9	94
216B	23 Sep 79	0230	76-37.8N	07-21.3W	421	160	10	1007.9	2.2	9	94
217	23 Sep 79	0405	76-28.0N	07-24.6W	933	150	8	1008.2	1.2	8	95
218	23 Sep 79	0600	76-37.1N	07-02.0W	914	150	6	1008.6	0.0	8	95
219	23 Sep 79	0720	76-45.3N	06-43.2W	768	155	6	1008.9	0.2	8	95
220	23 Sep 79	0900	76-55.0N	06-10.9W	860	160	6	1009.4	0.6	7	96
221	23 Sep 79	1136	77-04.7N	05-47.0W	805	170	6	1010.2	1.2	7	96
222	23 Sep 79	1326	77-53.0N	05-54.9W	1189	165	9	1010.2	1.4	7	96
223	23 Sep 79	1520	76-39.0N	06-02.9W	1573	155	12	1010.2	1.7	7	96
224	23 Sep 79	1640	76-31.5N	06-09.4W	1856	150	14	1010.2	1.9	8	96
225	23 Sep 79	2000	76-43.7N	05-17.3W	1829	130	16	1010.5	1.6	8	96
226	23 Sep 79	2240	76-57.5N	04-22.2W	1646	120	14	1010.8	1.0	7	96
227	24 Sep 79	0100	77-15.8N	05-08.9W	1097	110	11	1010.9	0.0	7	96
228	24 Sep 79	0325	77-33.5N	05-49.3W	366	110	10	1010.6	-0.2	7	96

CTD STATION DATA; ARCTIC EAST 1979

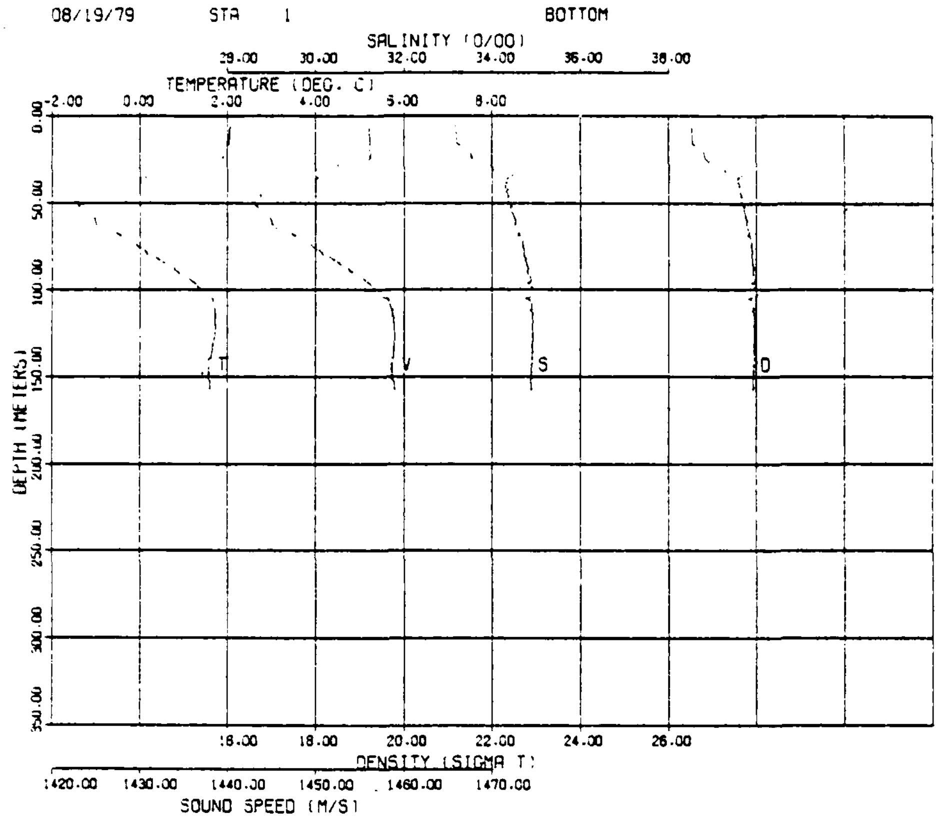
USCGC WESTWIND

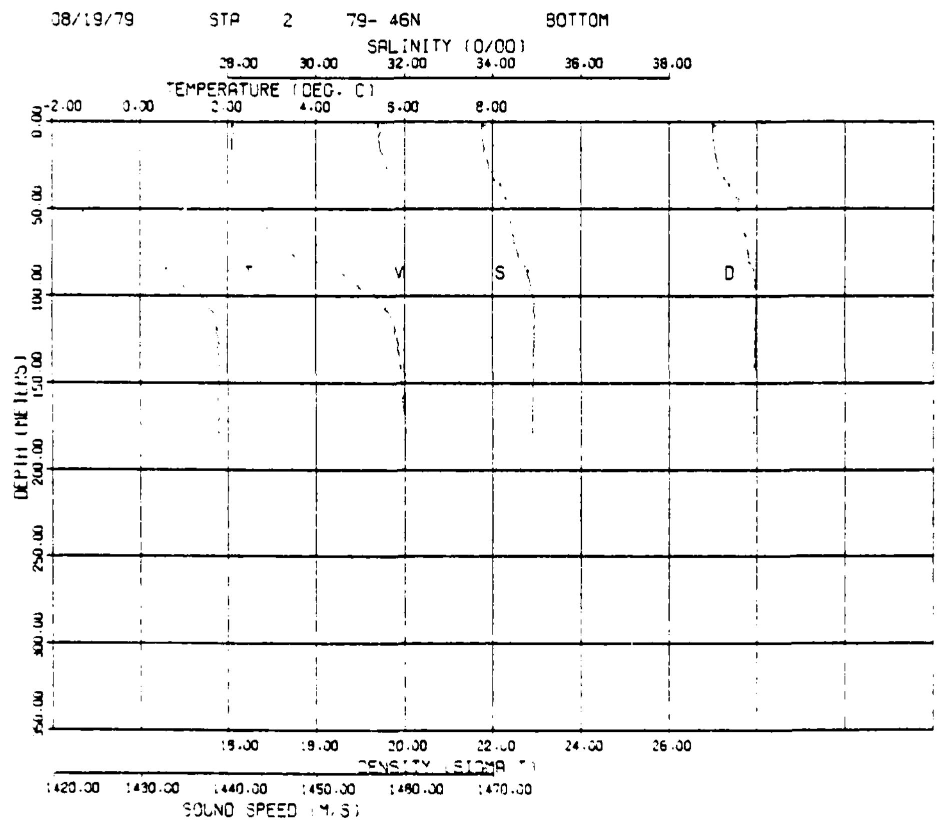
STATION NUMBER	DATE	TIME (GMT)	POSITION		DEPTH (m)	WIND DIR	WIND SPD	BAR	AIR TEMP	CLOUD	VIS
229	24 Sep 79	0715	77-50.3N	06-35.0W	283	110	7	1010.3	-0.4	8	96
230	24 Sep 79	1055	77-59.8N	07-56.6W	210	100	8	1010.3	0.7	8	96
231	24 Sep 79	1345	78-00.0N	07-12.9W	342	090	8	1010.1	1.2	8	96
232	24 Sep 79	1705	78-00.0N	06-10.9W	302	060	7	1009.5	1.8	7	97
233	24 Sep 79	2000	77-58.4N	05-33.9W	333	065	11	1008.8	1.6	7	97
234	24 Sep 79	2130	77-59.5N	04-47.0W	1646	075	15	1008.2	1.4	8	95
235	24 Sep 79	2325	78-00.3N	04-01.9W	2524	080	18	1007.5	1.2	8	95
236	25 Sep 79	0625	77-23.1N	05-35.0W	640	080	14	1003.5	1.2	8	95

APPENDIX A

PART II

CTD STATION PROFILES


08/19/79 STA 1 BOTTOM
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


08/19/79 STA 2 79- 46N BOTTOM
SALINITY (O/OO)
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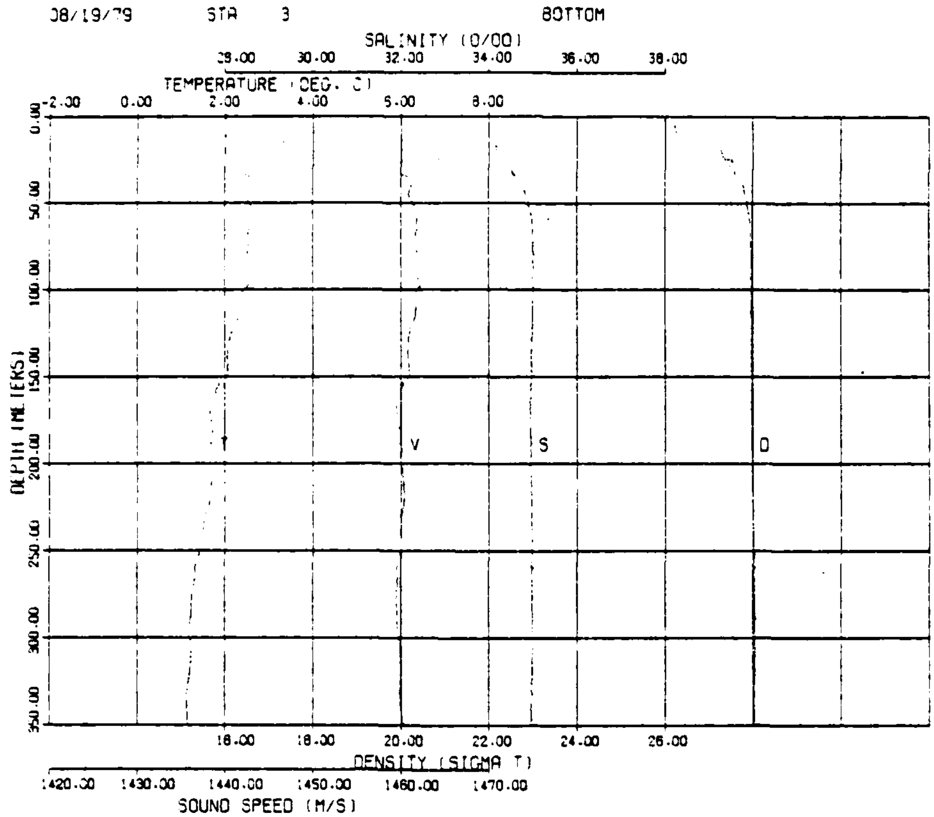
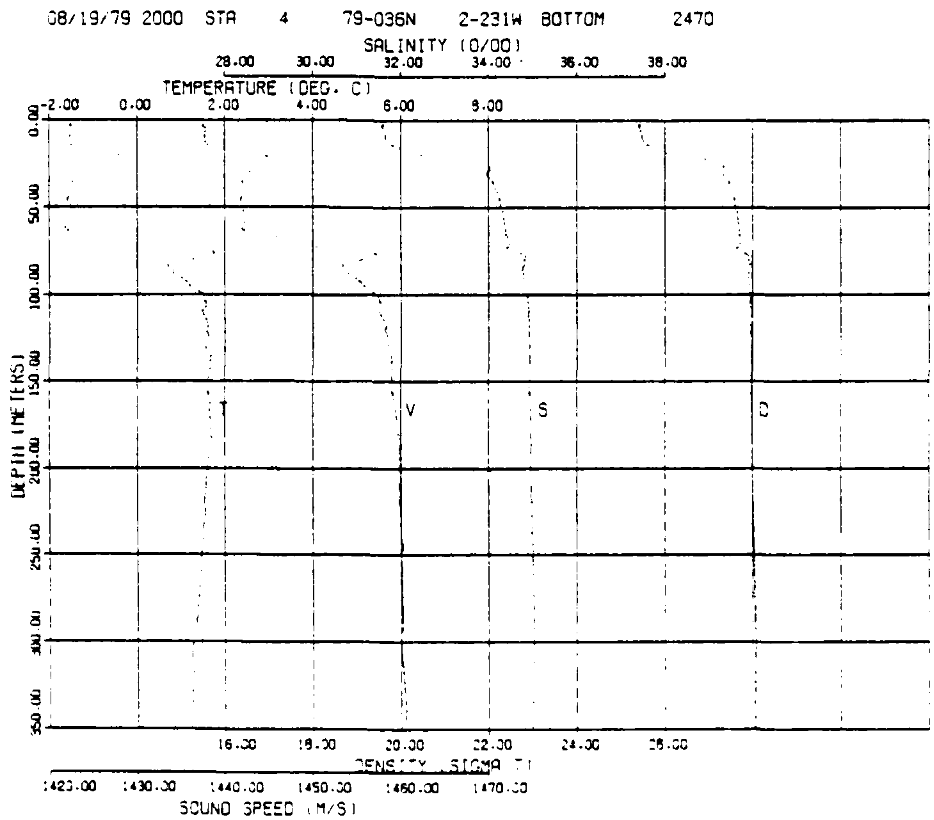
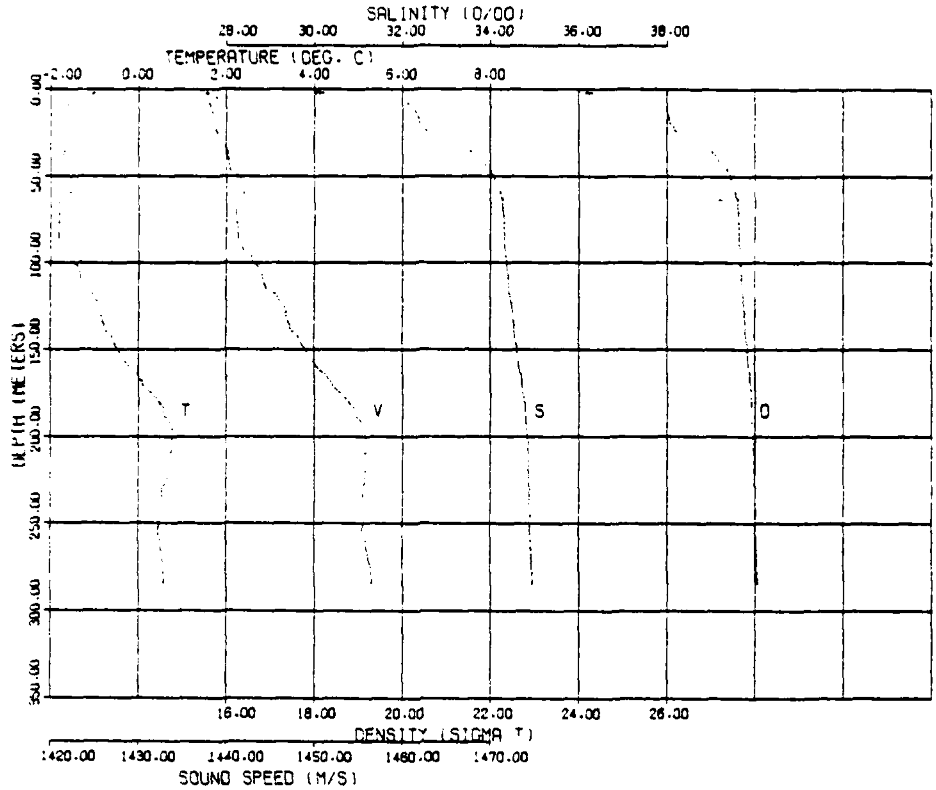
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

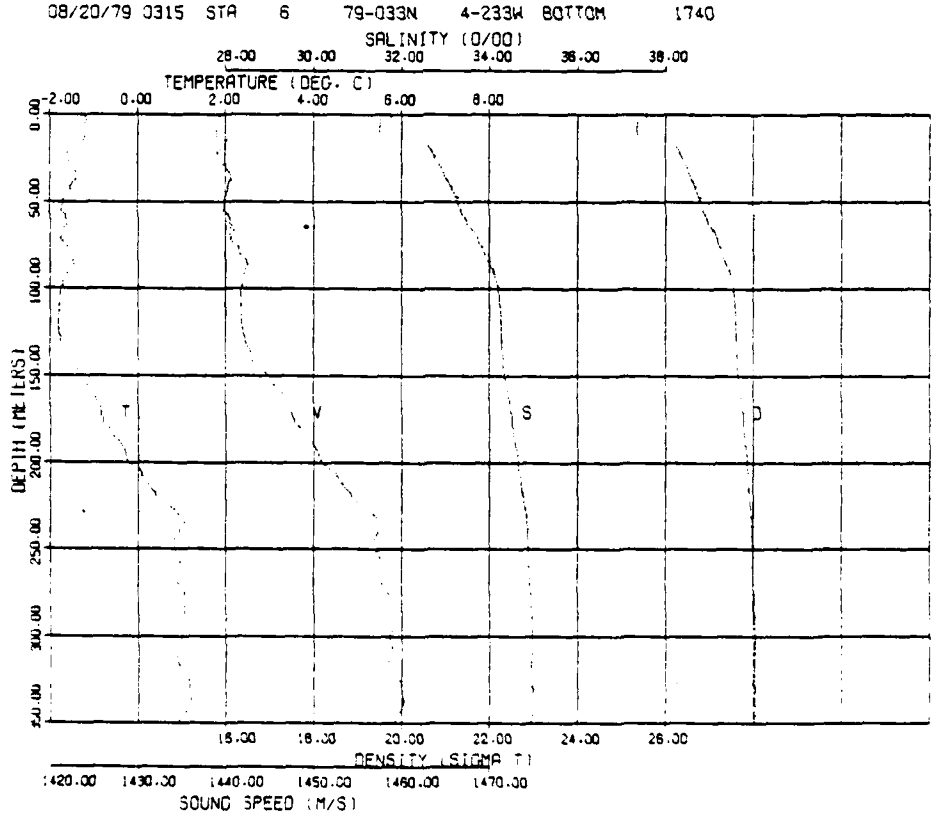

08/19/79 STA 3 BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

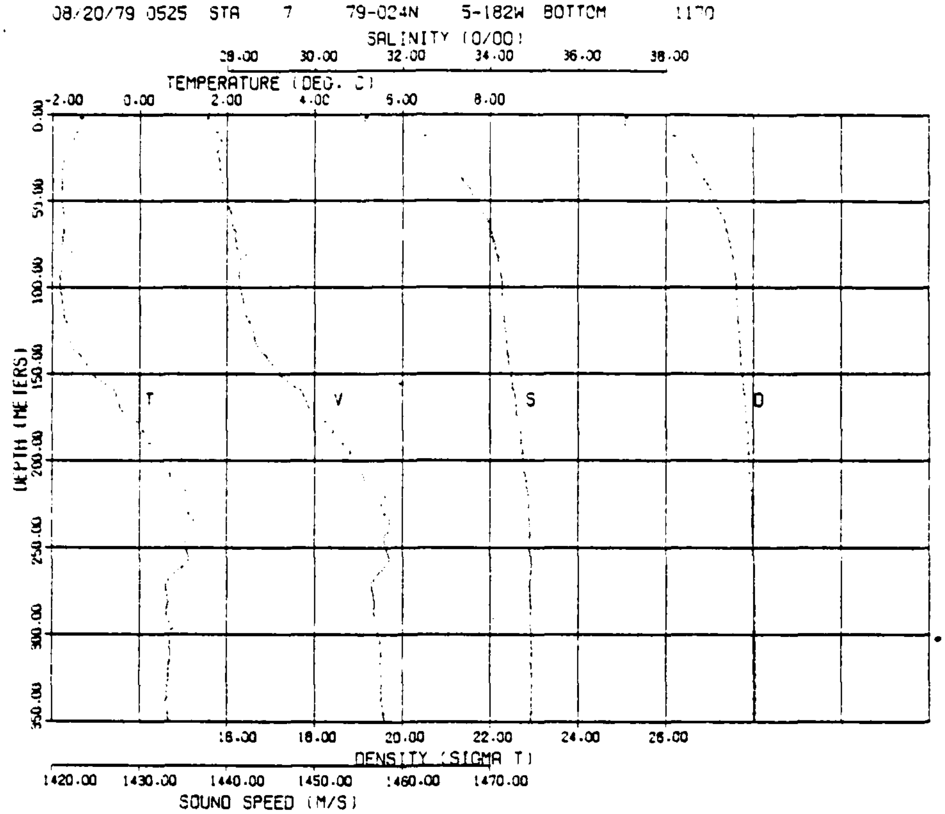

08/19/79 2000 STA 4 79-036N 2-231W BOTTOM 2470
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

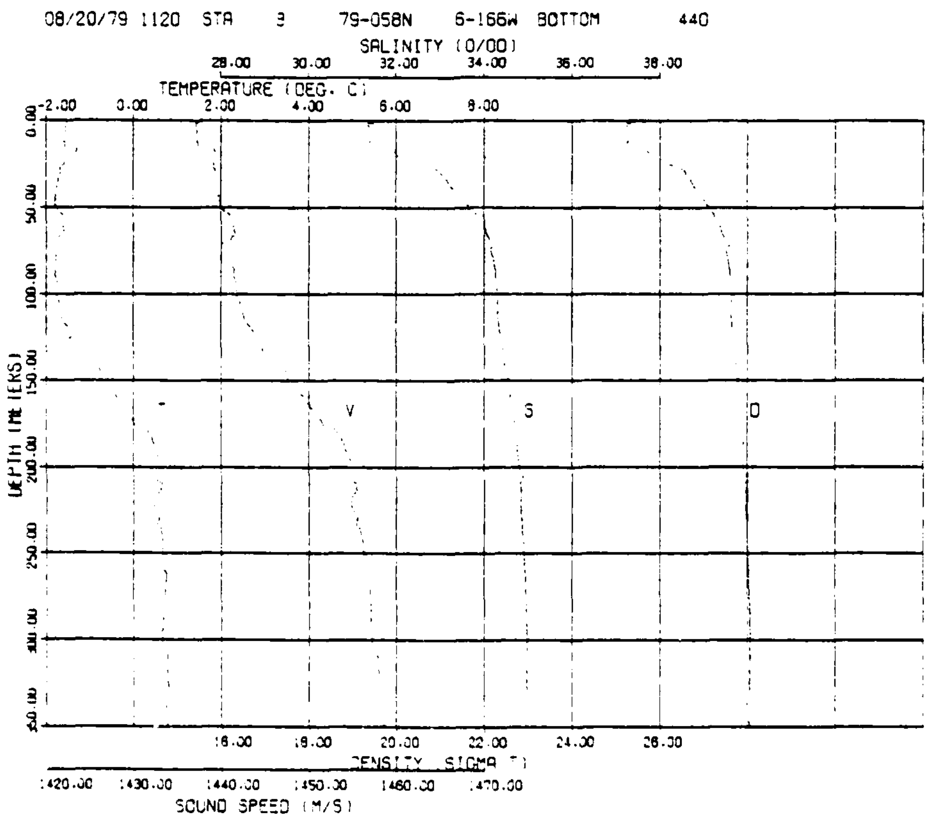
08/19/79 2300 STA 5 79-039N 3-186W BOTTOM 2250



08/20/79 0315 STA 6 79-033N 4-233W BOTTOM 1740




08/20/79 0525 STA 7 79-024N 5-182W BOTTOM 1170
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


08/20/79 1120 STA 8 79-058N 6-166W BOTTOM 440
SALINITY (O/OO)
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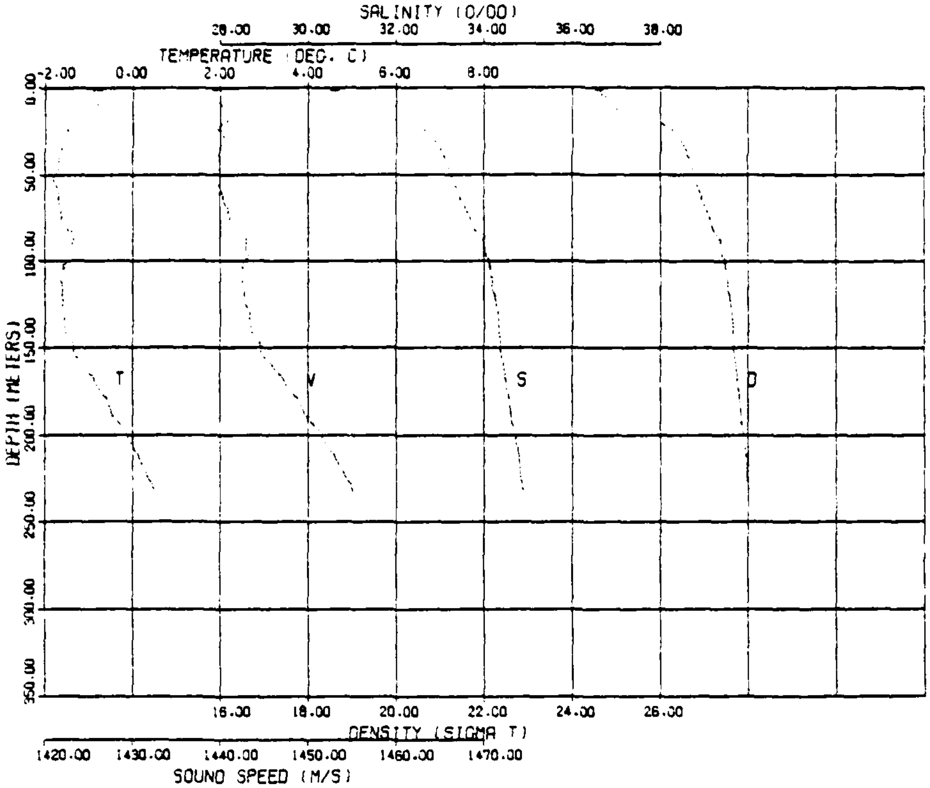
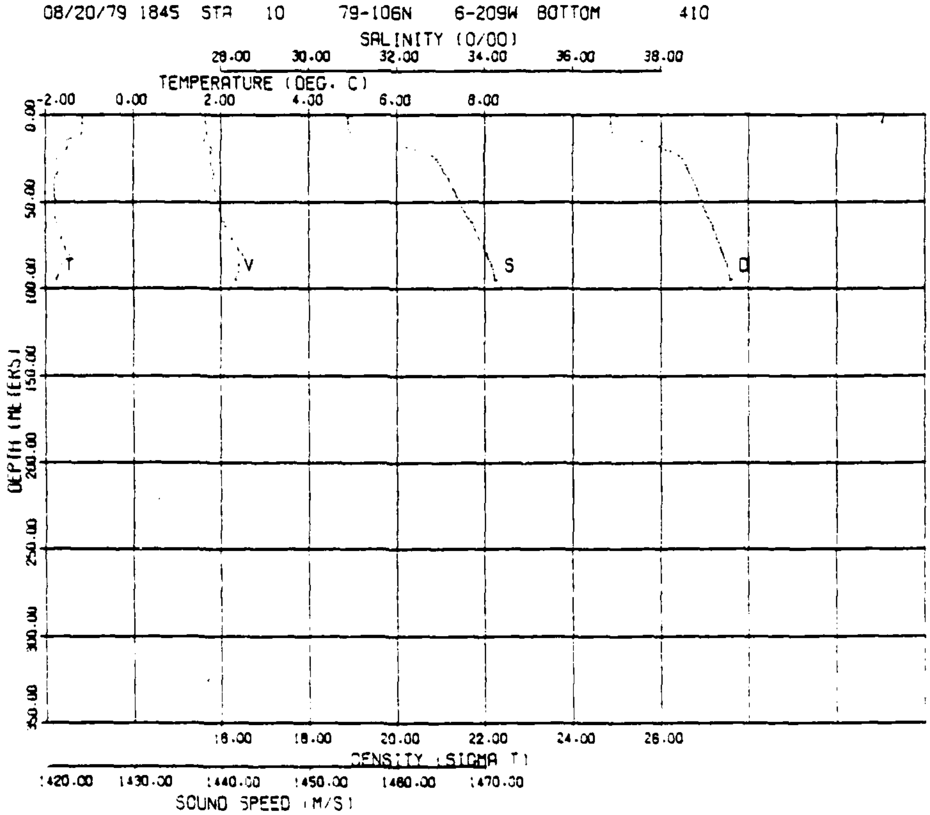
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

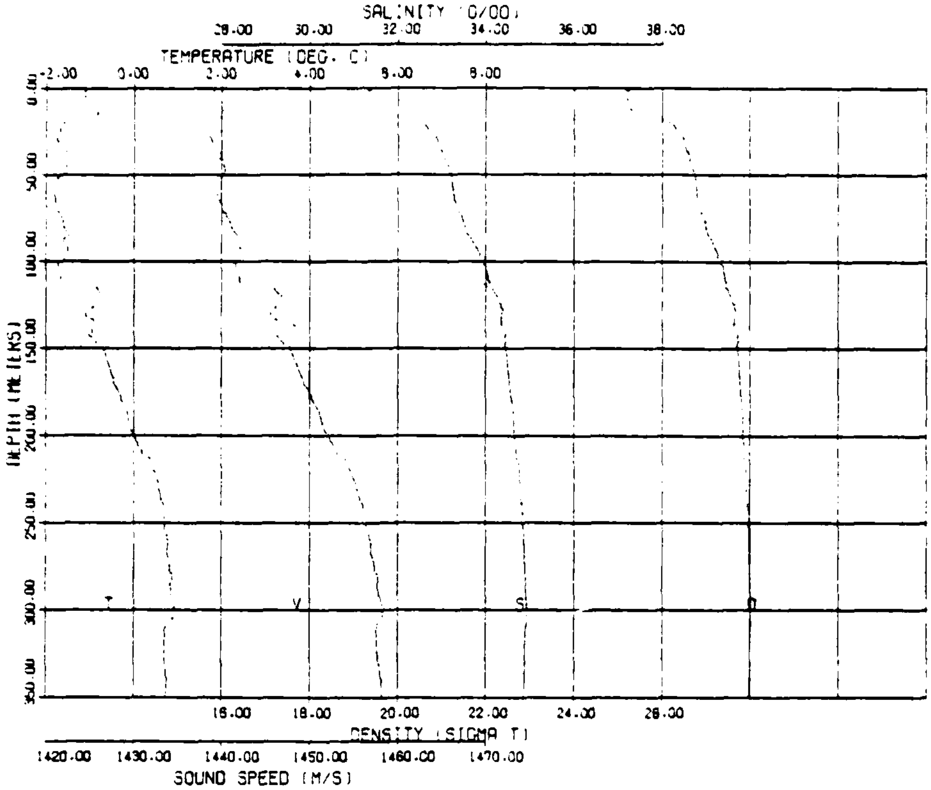
08/20/79 1446 STA 9 79-063N 6-579W BOTTOM 238



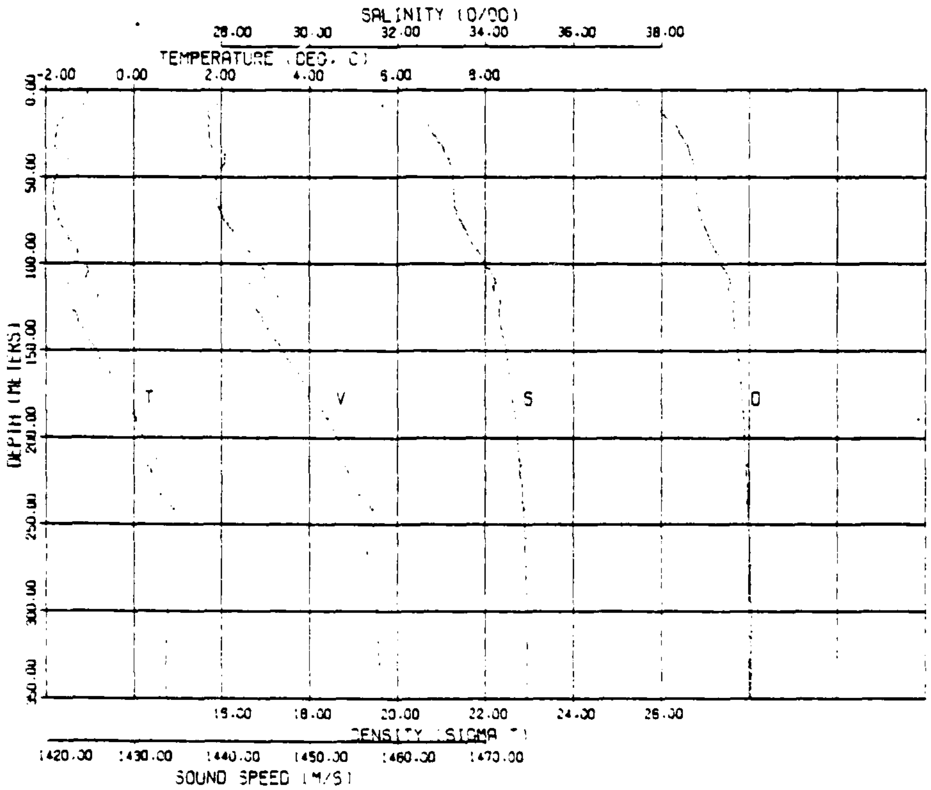
08/20/79 1845 STA 10 79-106N 6-209W BOTTOM 410



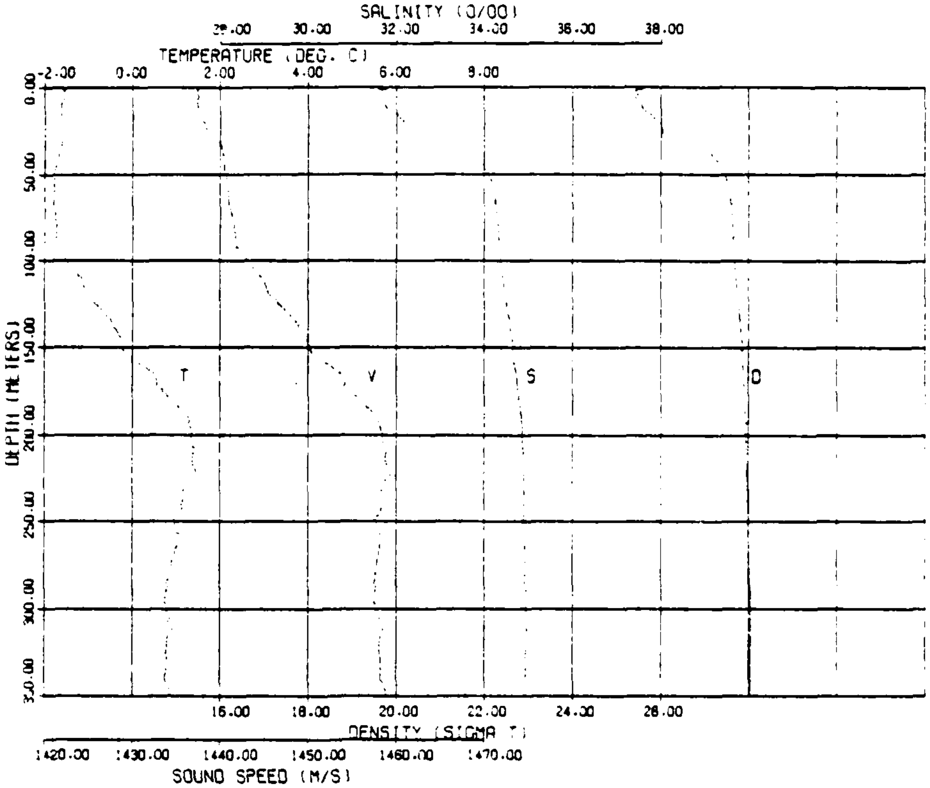
08/21/79 0225 STA 11 79-183N 5-193W BOTTOM 950



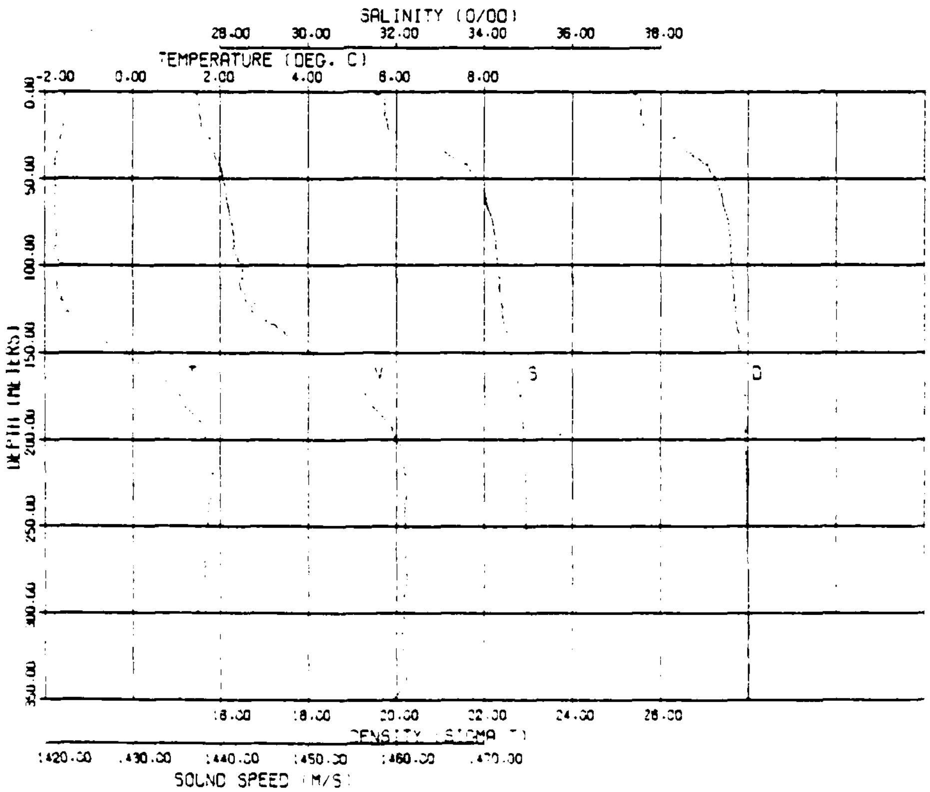
08/21/79 0350 STA 12 79-224N 5-100W BOTTOM 1198



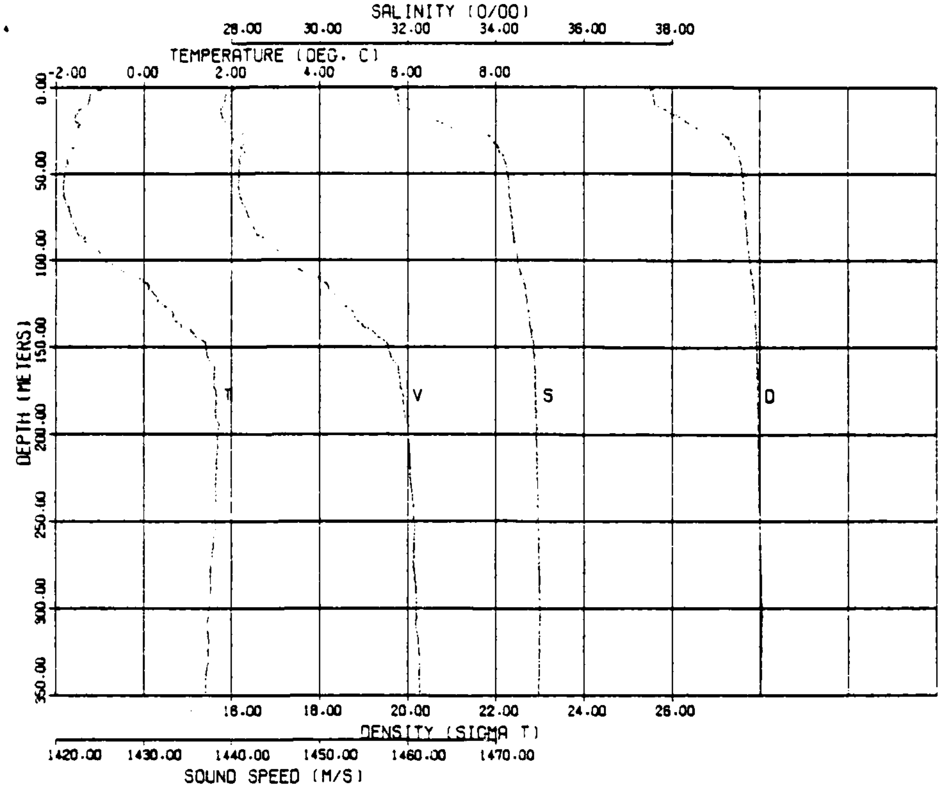
08/21/79 0810 STA 13 79-303N 3-548W BOTTOM 1975



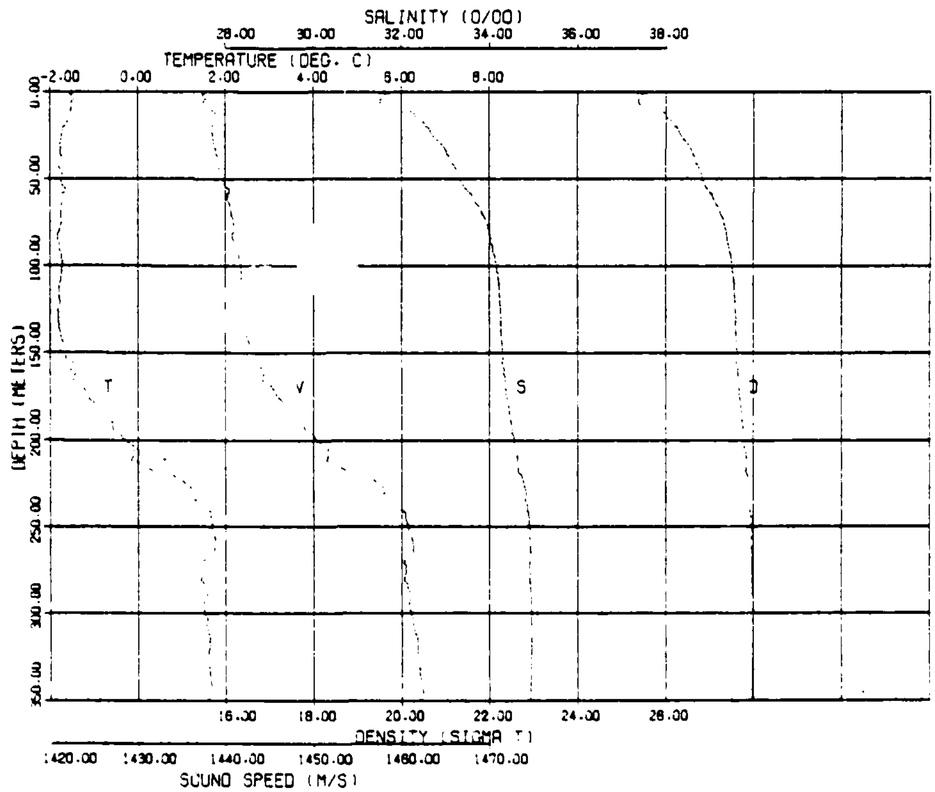
08/21/79 1223 STA 14 79-328N 3-113W BOTTOM 2250



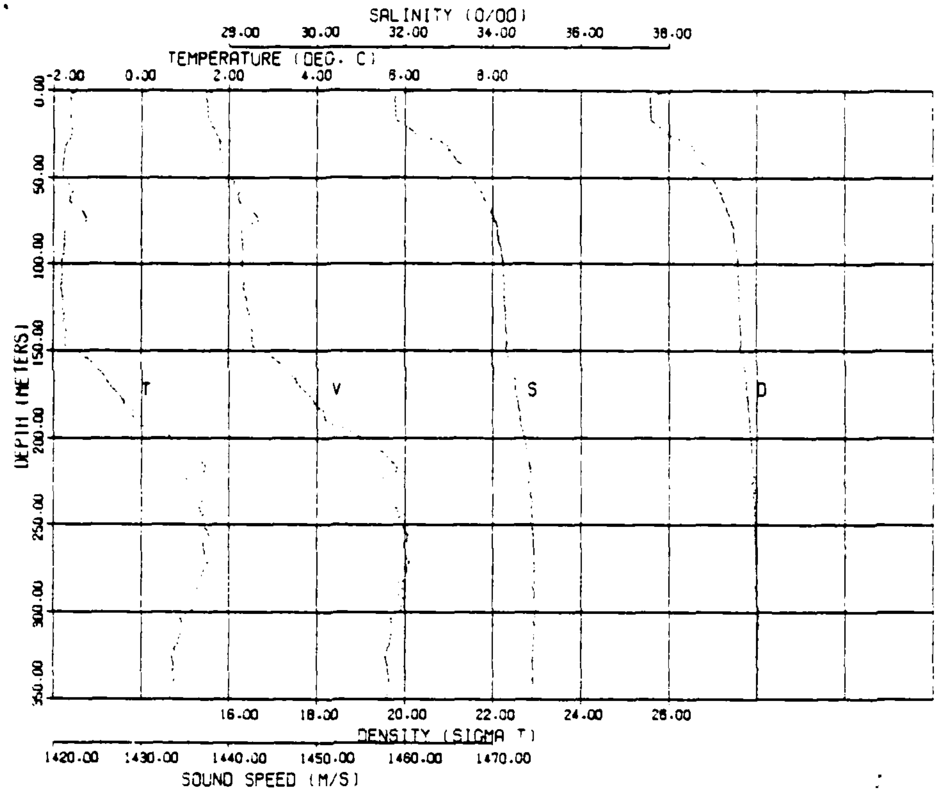
08/21/79 1717 STA 15 79-327N 1-109W BOTTOM 2743



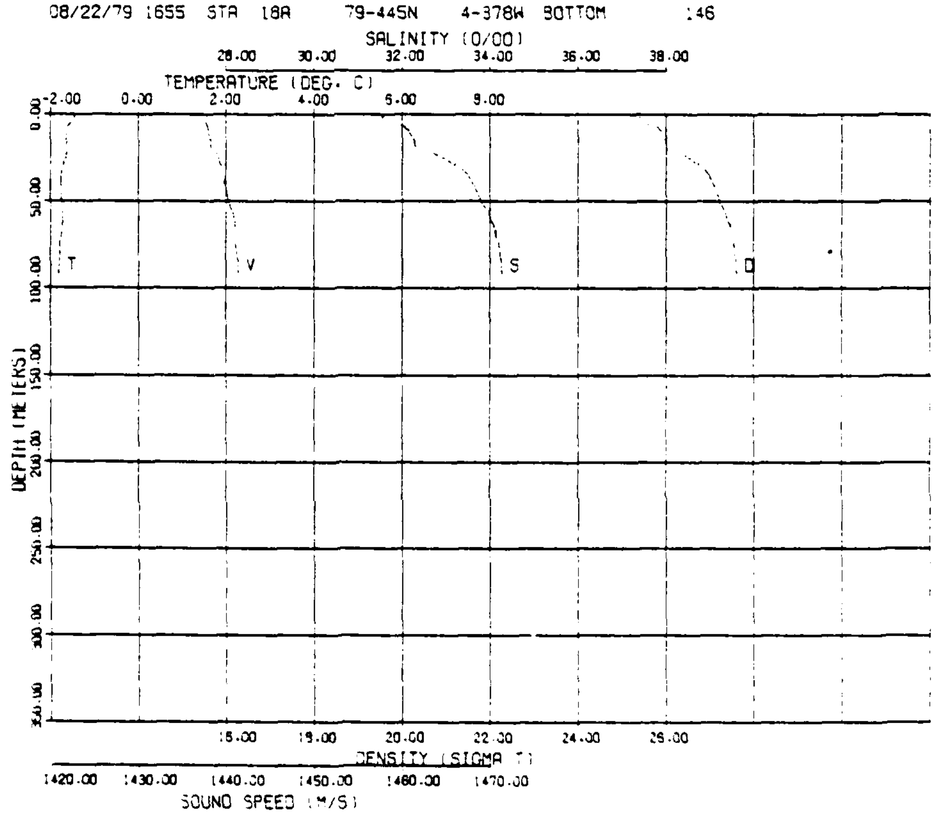
08/22/79 0715 STA 16 79-492N 2-509W BOTTOM 2688

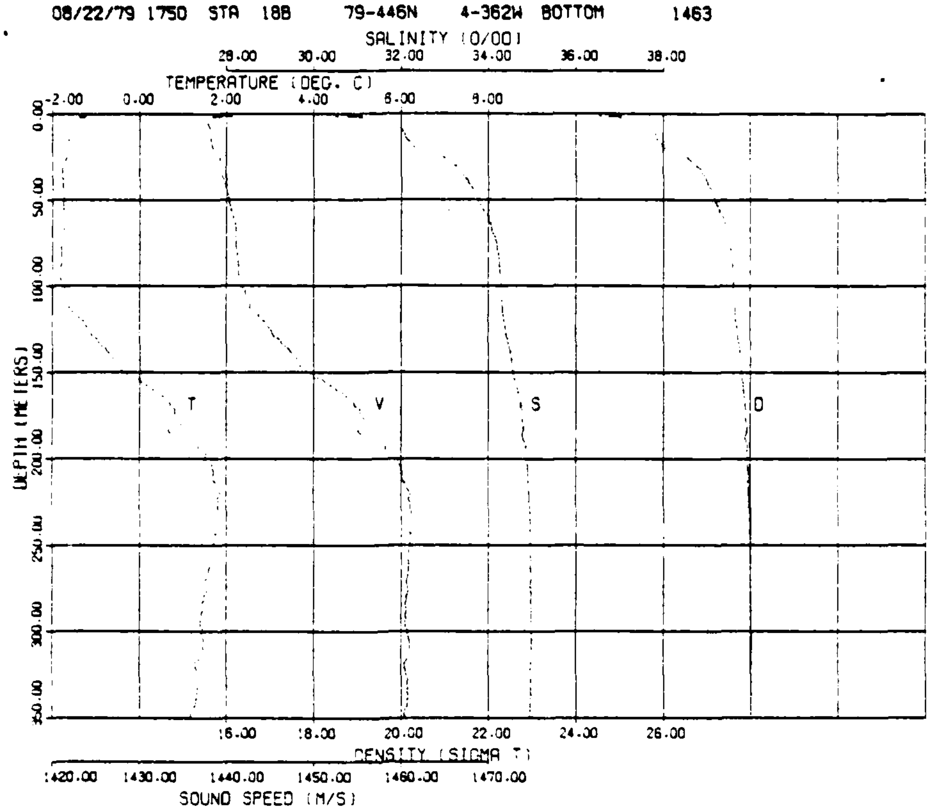


08/22/79 1305 STA 17 79-441N 3-411W BOTTOM 2140



08/22/79 1655 STA 18A 79-445N 4-378W BOTTOM 146




08/22/79 1750 STA 188 79-446N 4-362W BOTTOM 1463
SALINITY (0/00)
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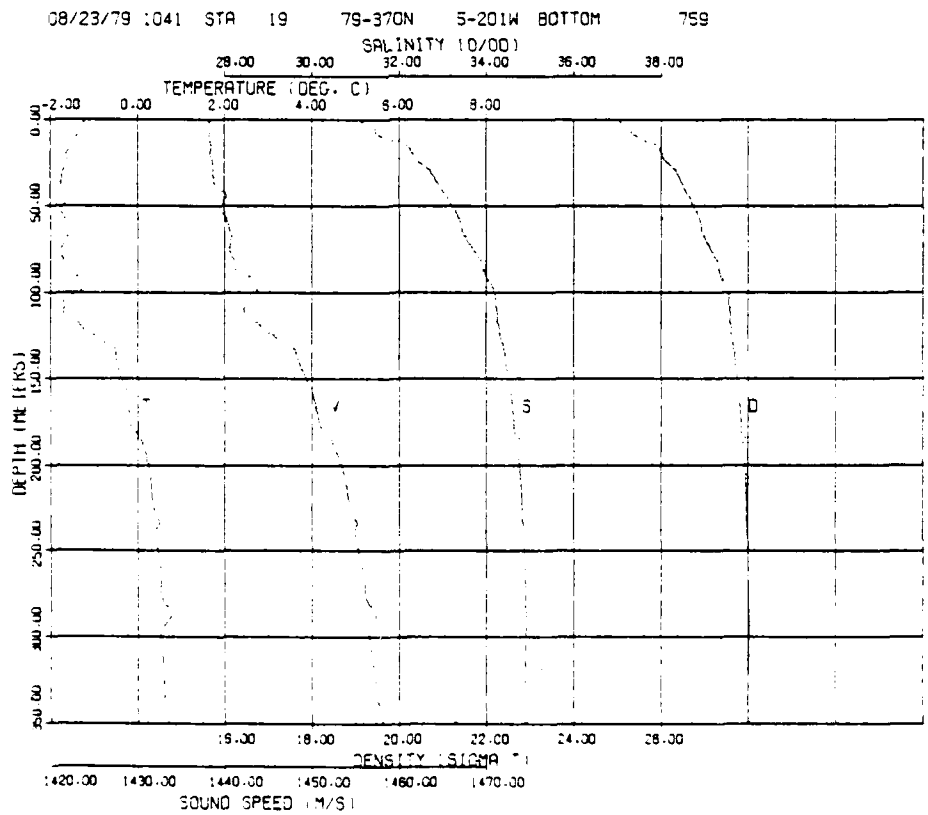
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)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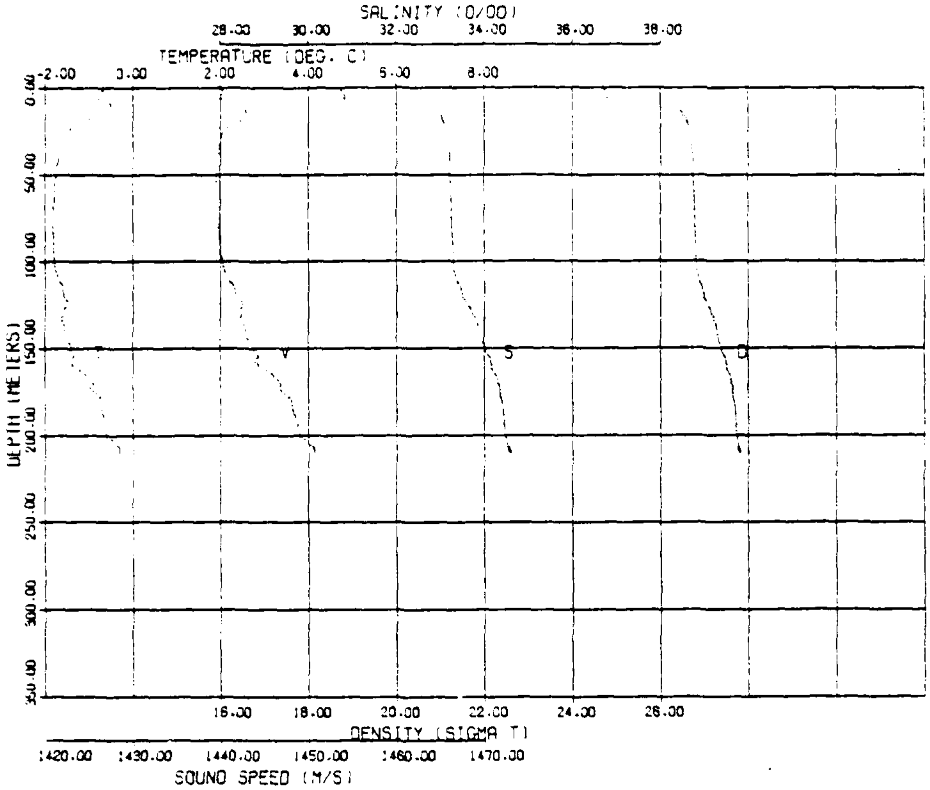
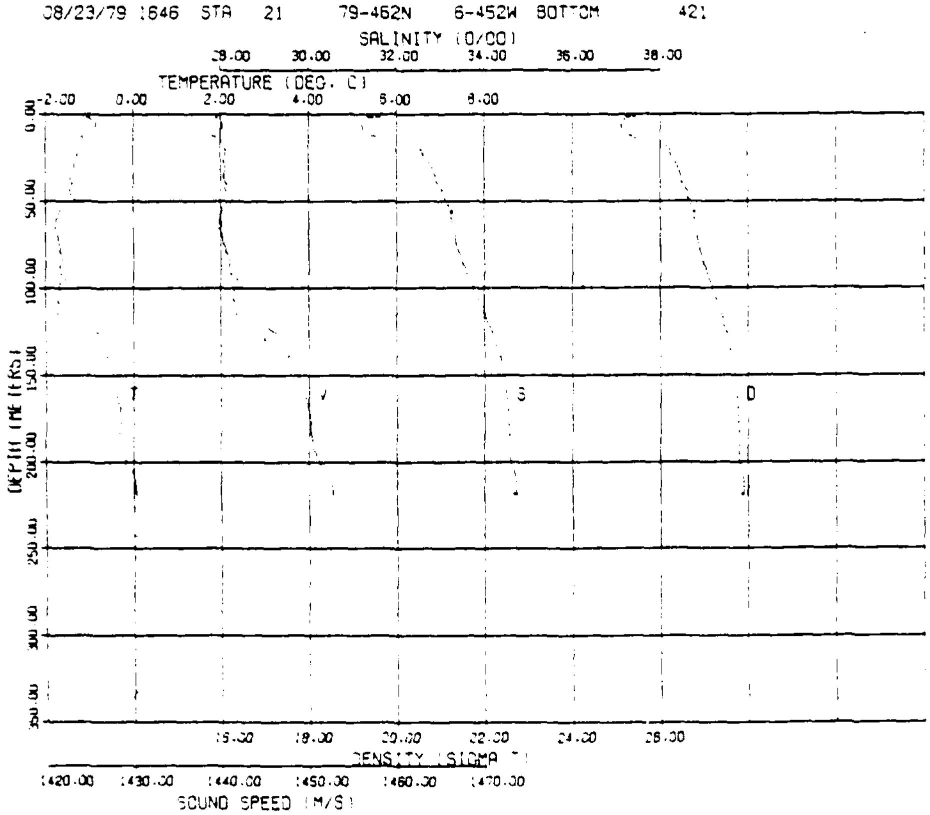
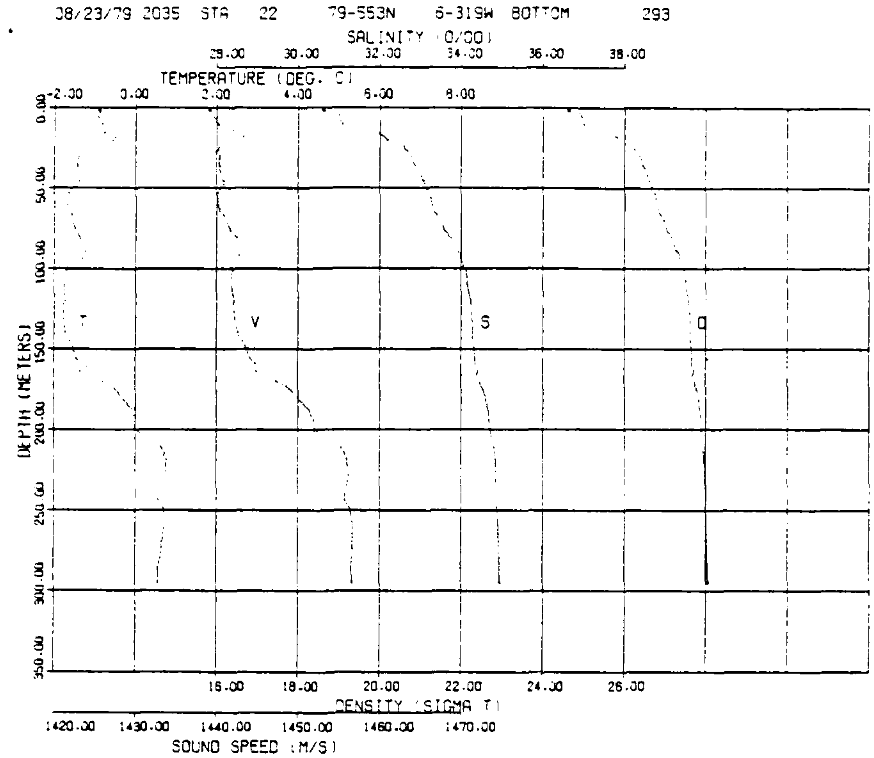
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

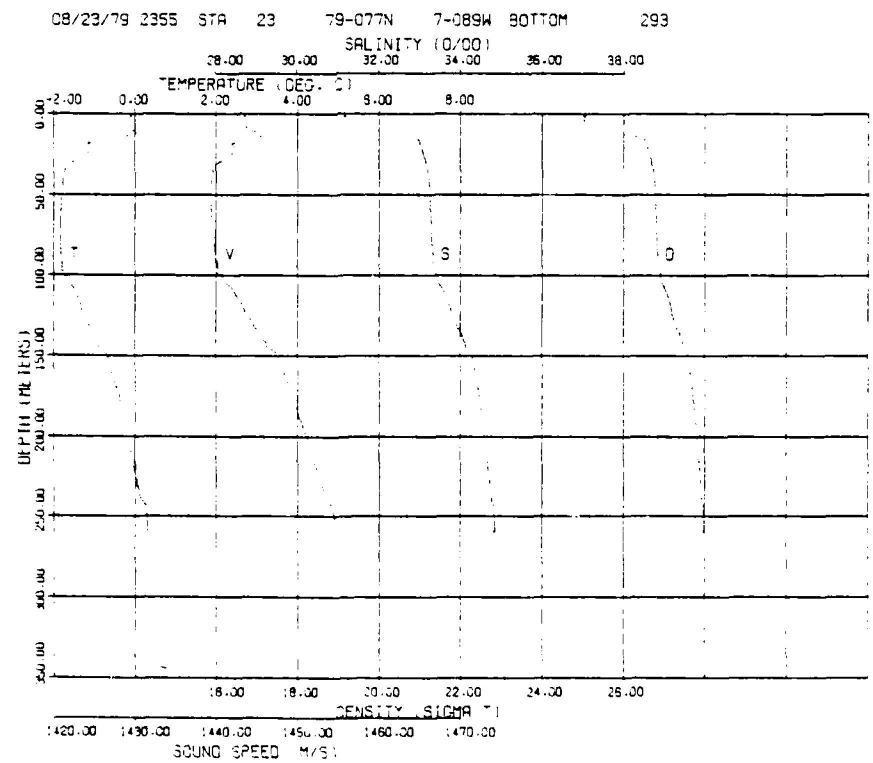
08/23/79 1315 STA 20 79-389N 6-173W BOTTOM 293



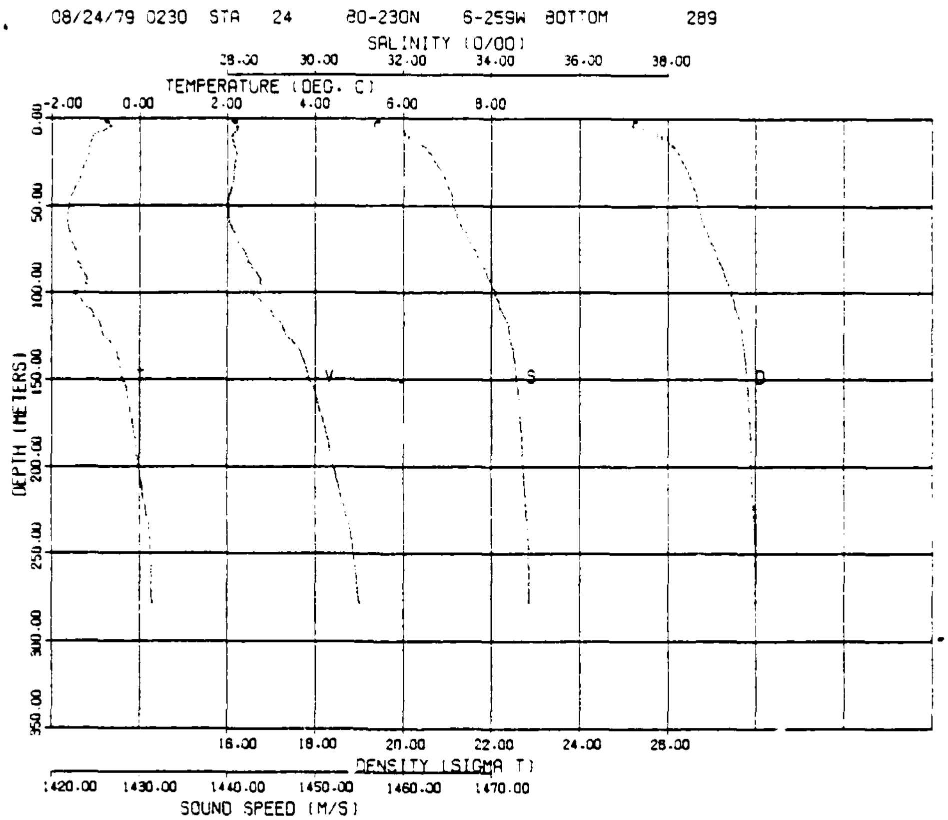
08/23/79 1646 STA 21 79-462N 6-452W BOTTOM 421







08/26/79 1510 STA 47 80-504N 10-367W BOTTOM 165


08/24/79 0230 STA 24 80-230N 6-259W BOTTOM 289
SALINITY (0/00)
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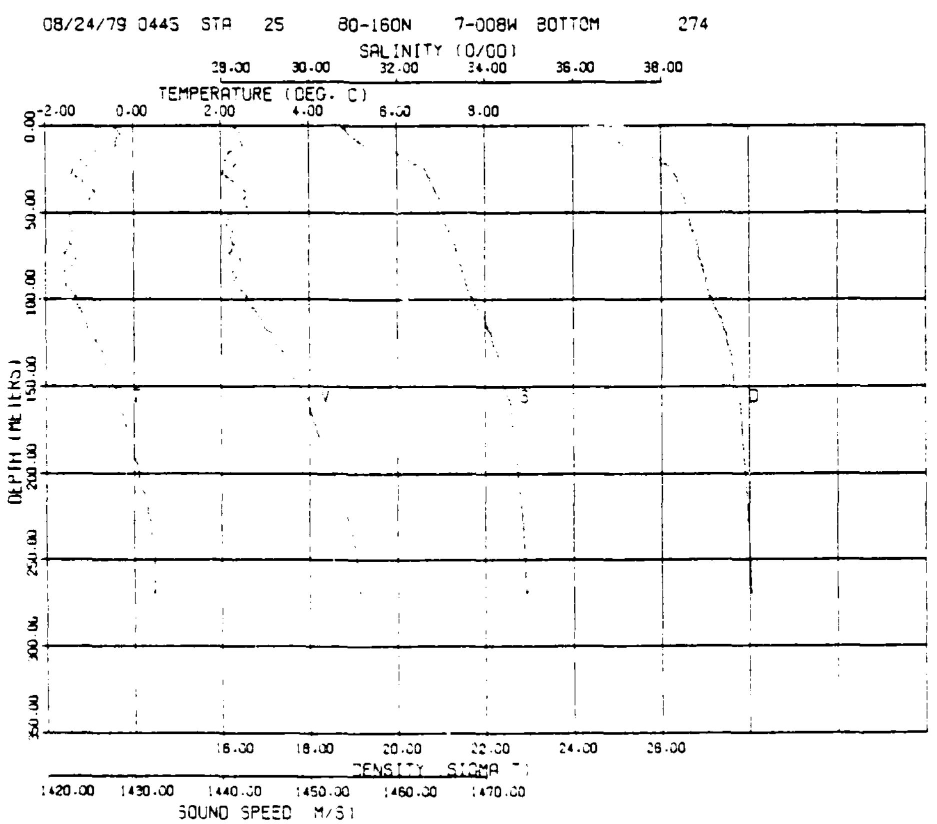
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


08/24/79 0445 STA 25 80-160N 7-008W BOTTOM 274
SALINITY (0/00)
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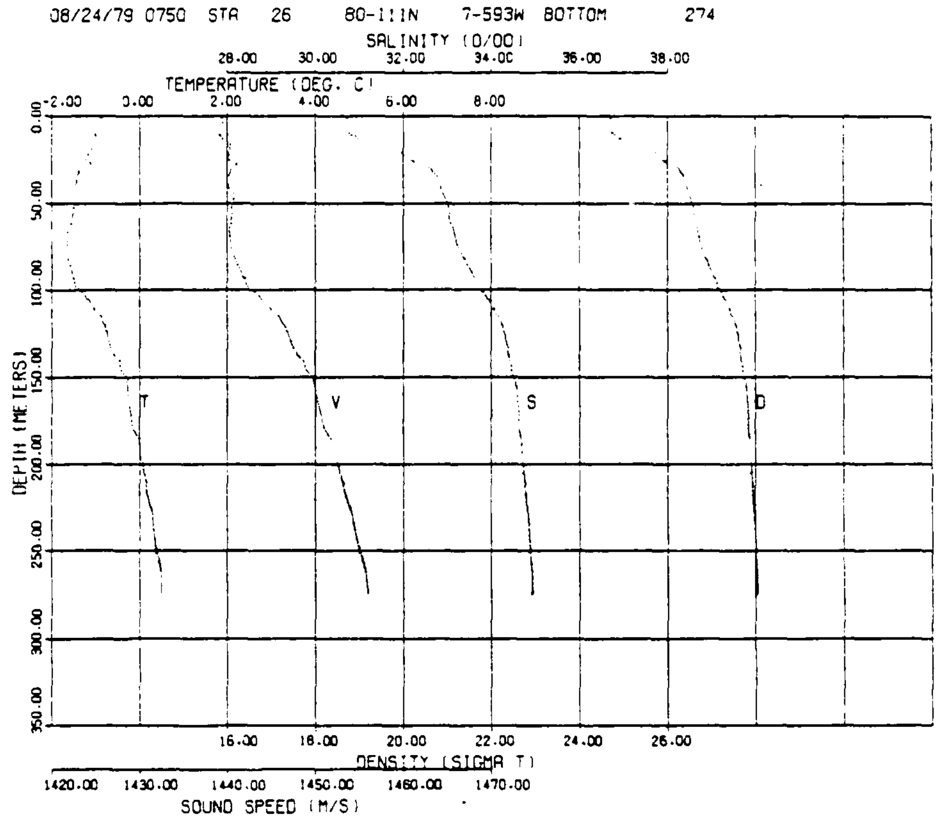
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



08/24/79 0750 STA 26 80-111N 7-593W BOTTOM 274
SALINITY (0/00)
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TEMPERATURE (DEG. C)
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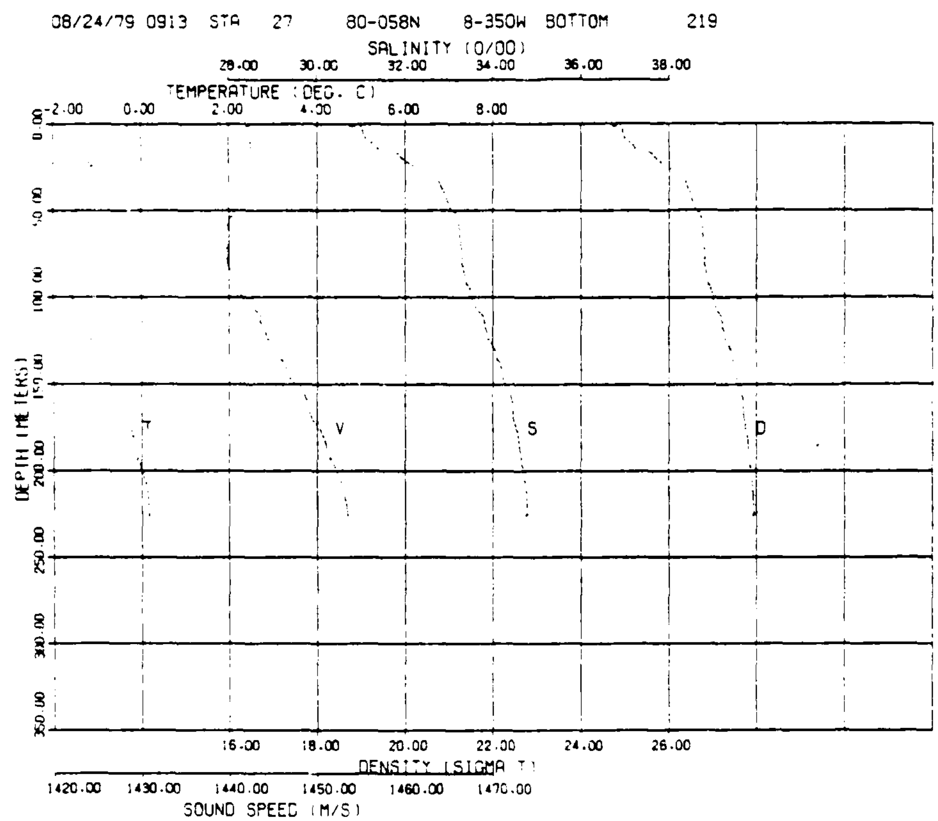
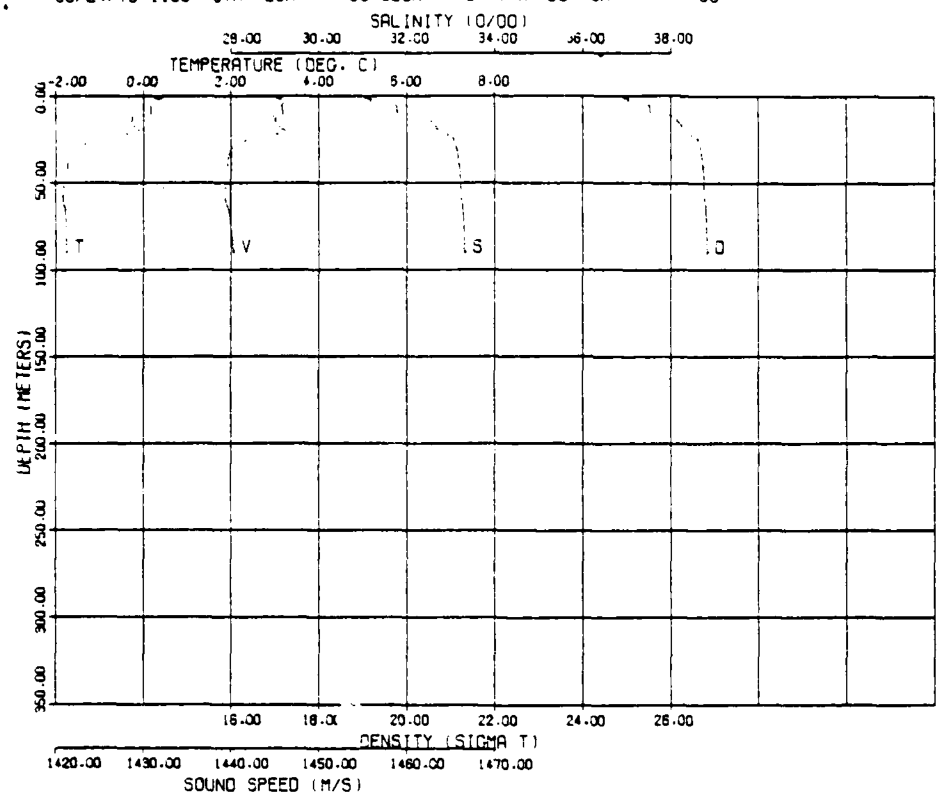
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

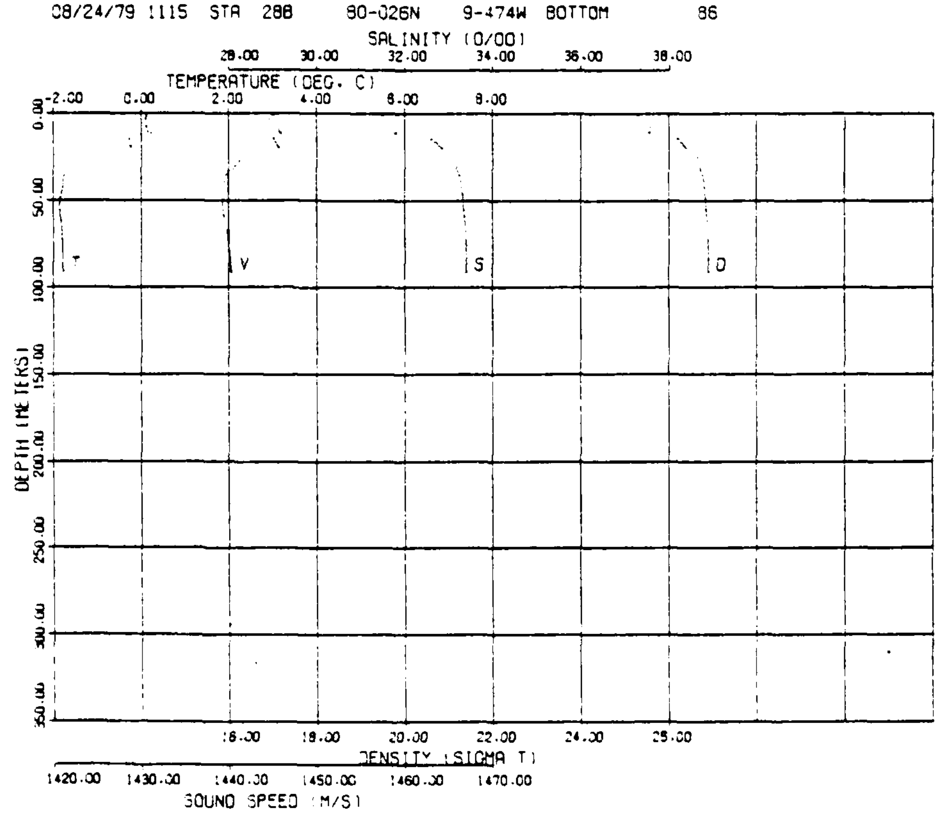


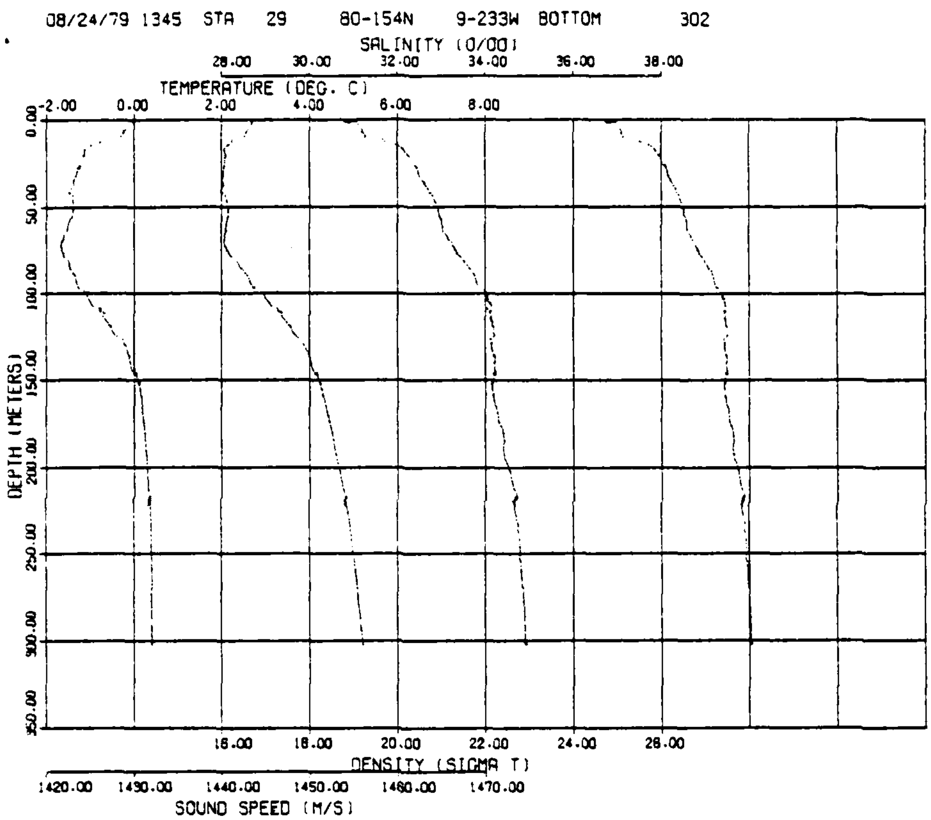
08/24/79 0913 STA 27 80-058N 8-350W BOTTOM 219
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

08/24/79 1100 STA 28A 80-026N 9-474W BOTTOM 86

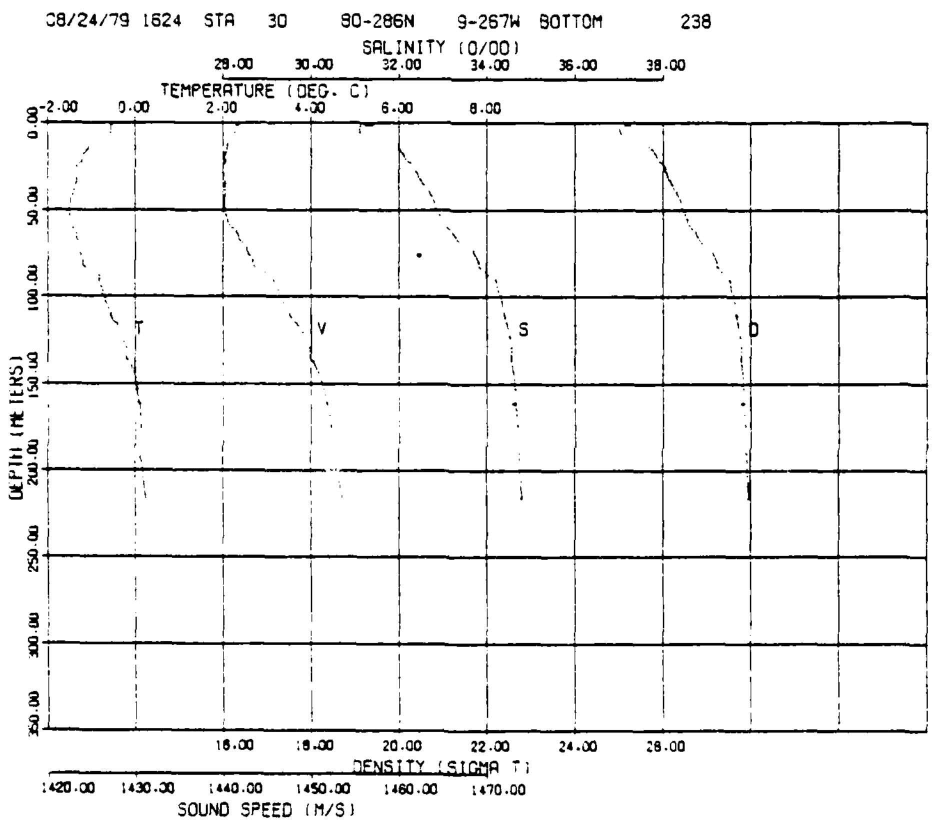


08/24/79 1115 STA 28B 80-026N 9-474W BOTTOM 86





08/24/79 1345 STA 29 80-154N 9-233W BOTTOM 302
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



08/24/79 1624 STA 30 80-286N 9-267W BOTTOM 238
SALINITY (0/00)
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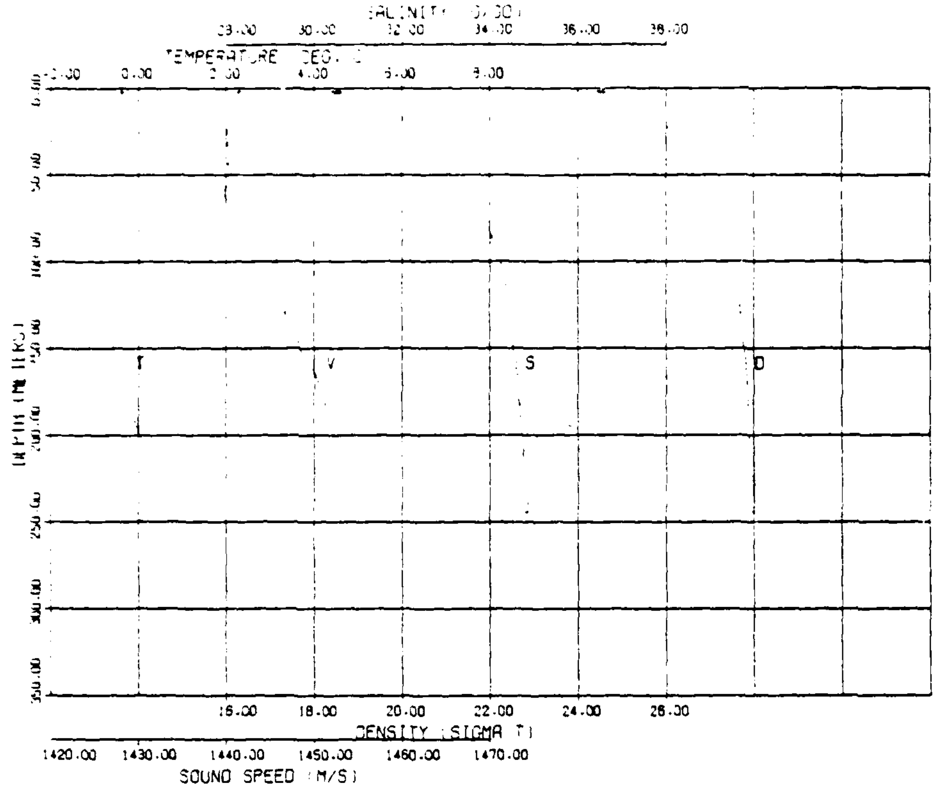
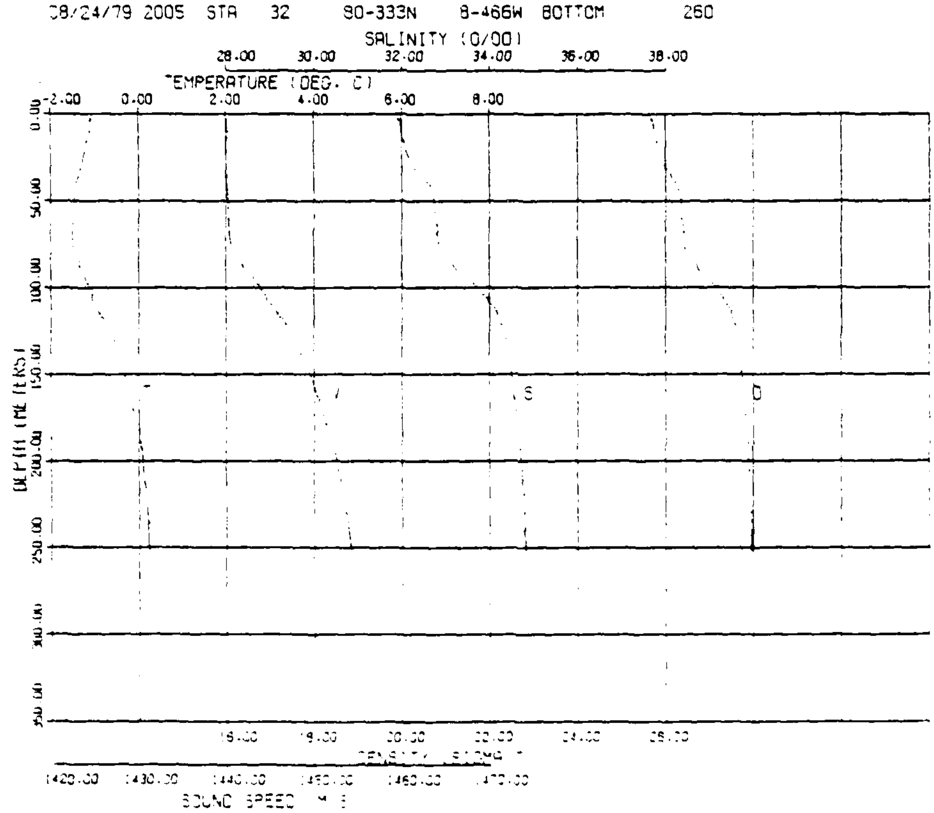
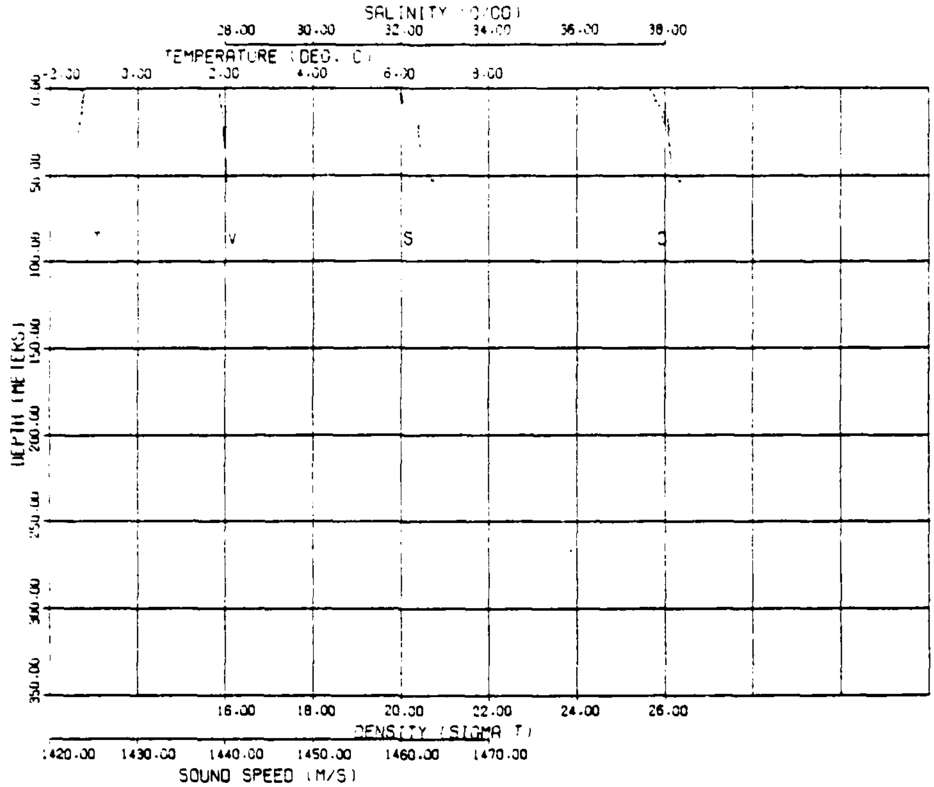
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
T
V
S
D
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

08 24 79 1900 STA 31 80-237N 8-517W BOTTOM 238

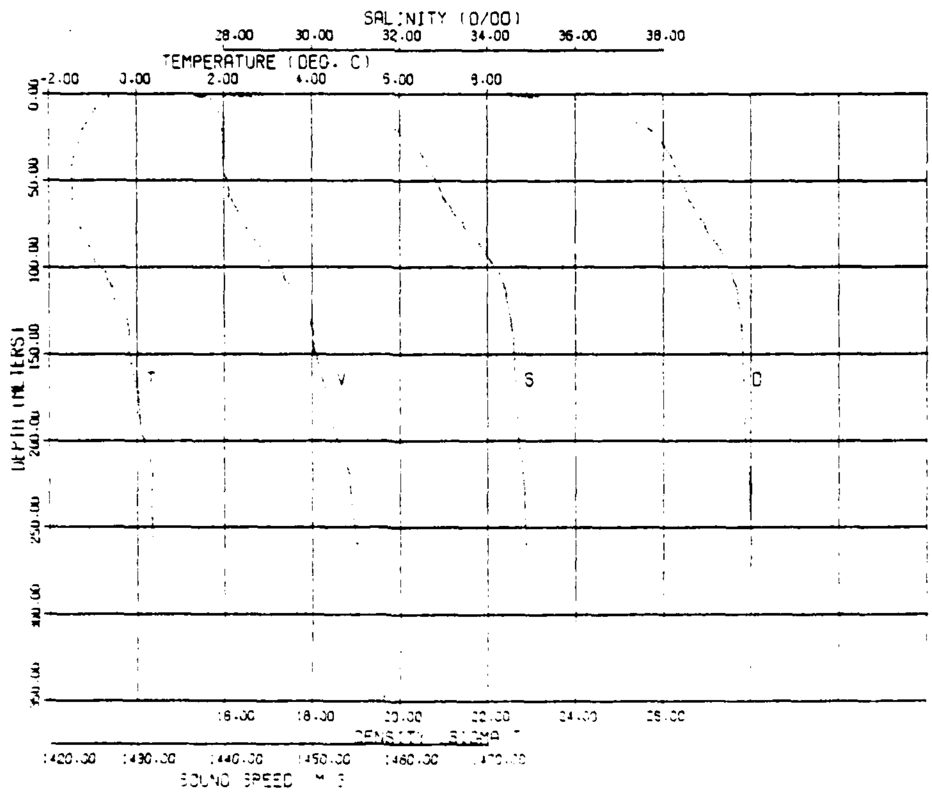


08/24/79 2005 STA 32 80-333N 8-466W BOTTOM 260

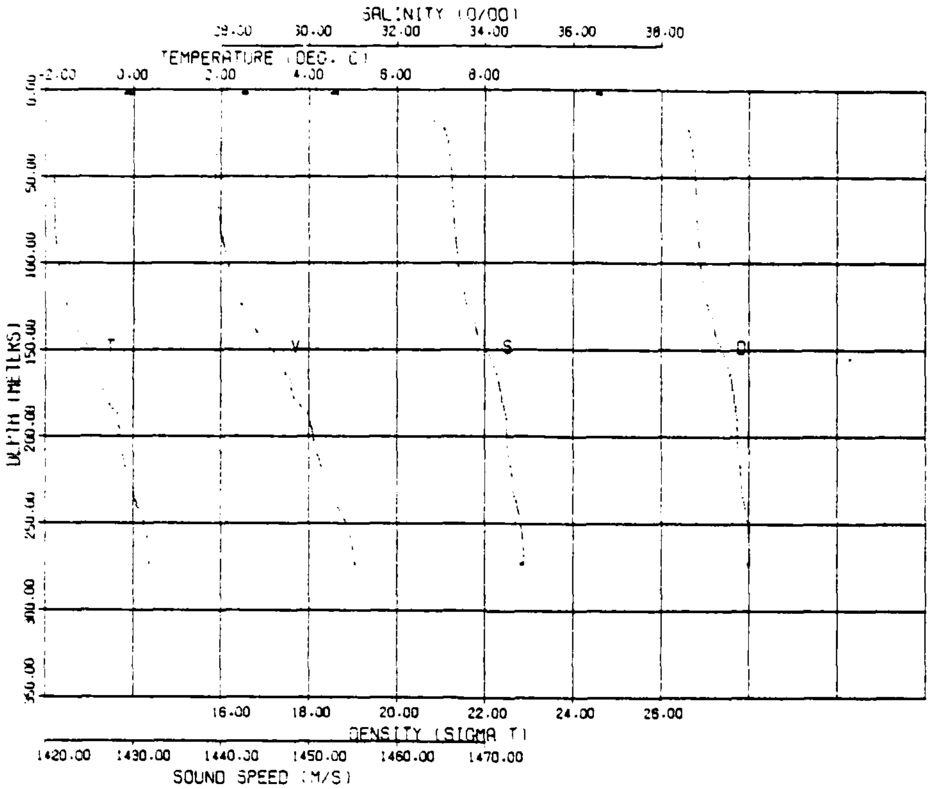




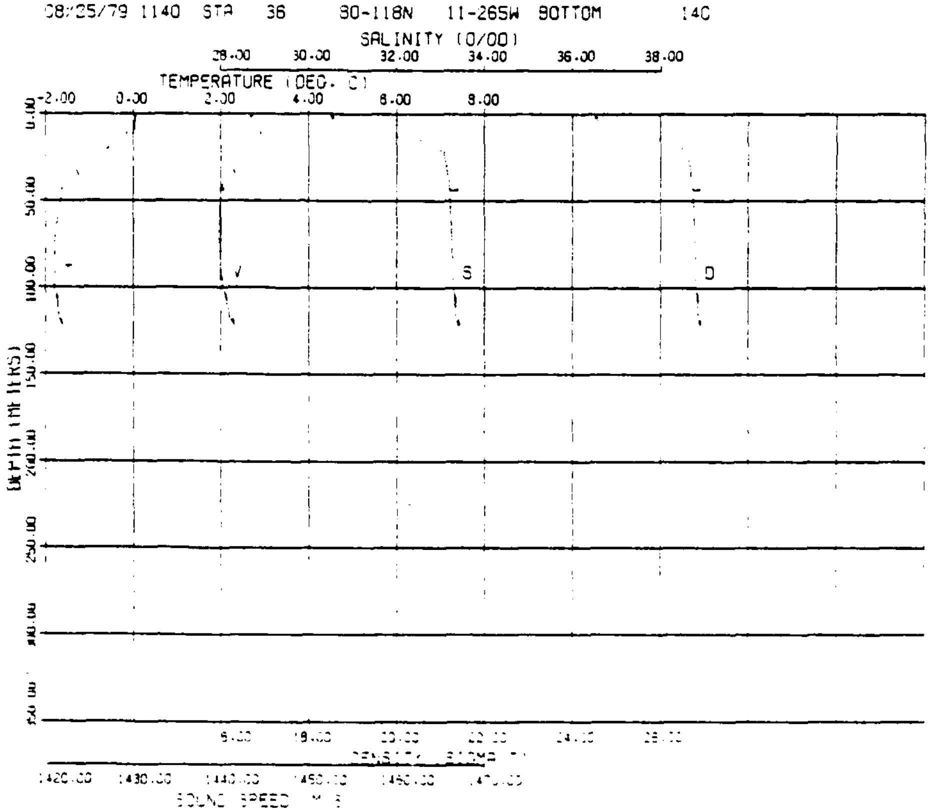
08/25/79 0810 STA 34 80-260N 9-377W BOTTOM 265

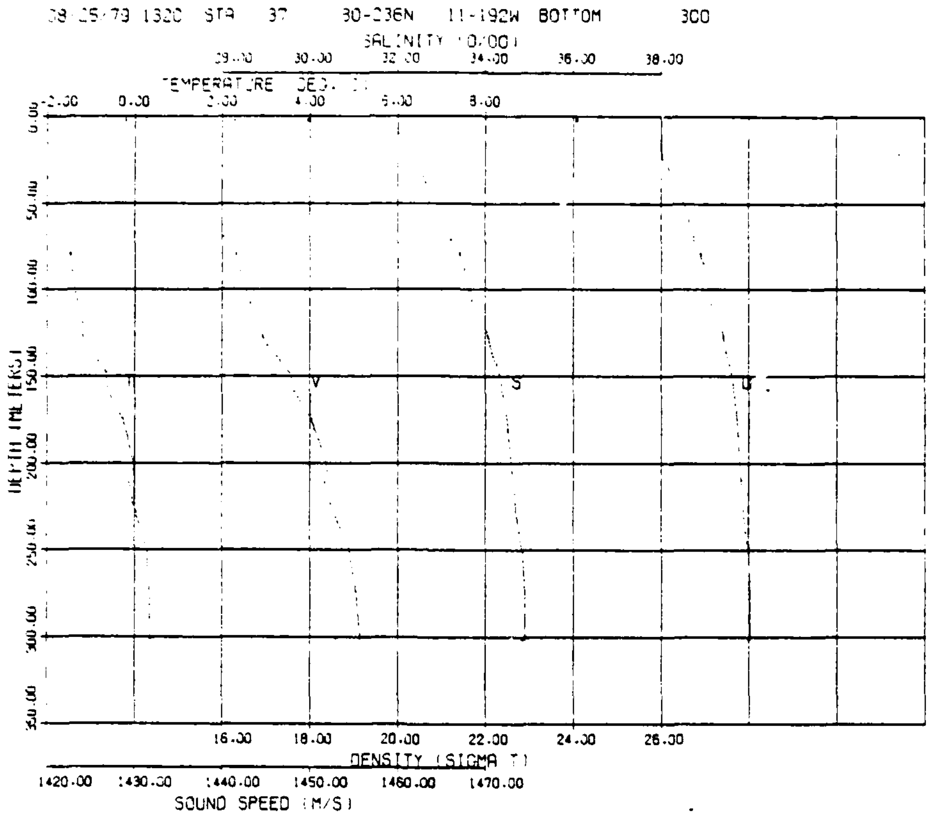


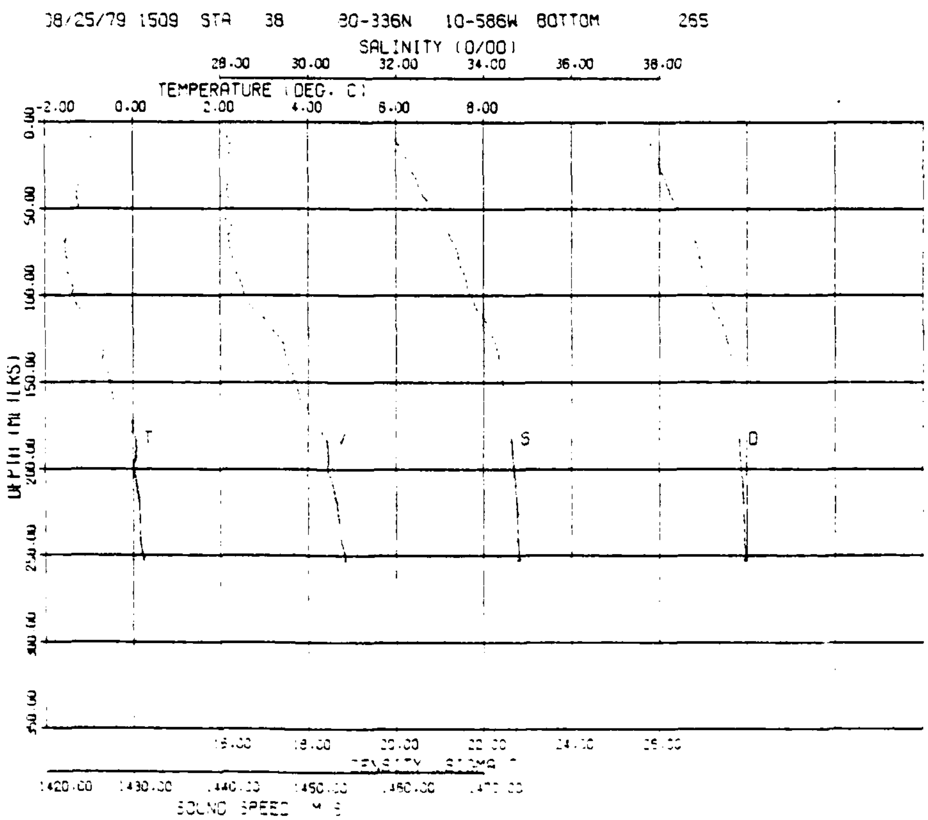
08/25/79 1004 STA 35 30-181N 10-263W BOTTOM 274

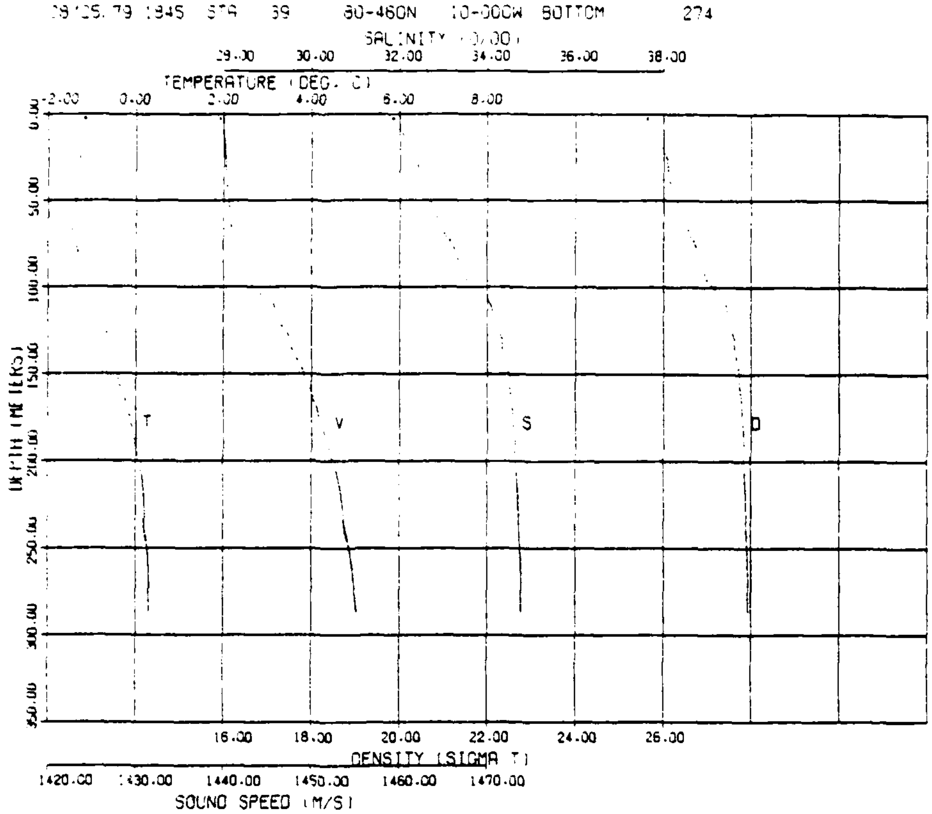


08/25/79 1140 STA 36 30-118N 11-265W BOTTOM 140




08/25/79 1320 STA 37 30-236N 11-192W BOTTOM 300
SALINITY (0/00)
TEMPERATURE (DEG. C)
DEPTH (METERS)
DENSITY (SIGMA T)
SOUND SPEED (M/S)


08/25/79 1509 STA 38 30-336N 10-586W BOTTOM 265
SALINITY (0/00)
TEMPERATURE (DEG. C)
DEPTH (METERS)



08/25/79 1945 STA 39 80-460N 10-000W BOTTOM 274
SALINITY (0/00)
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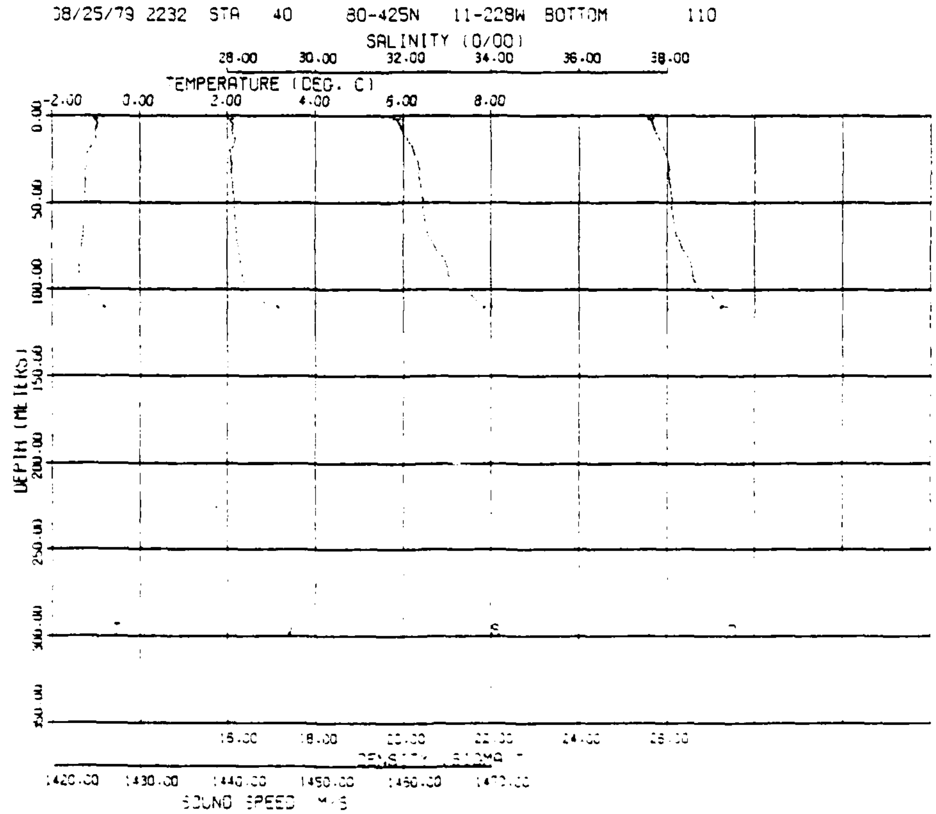
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



08/25/79 2232 STA 40 80-425N 11-228W BOTTOM 110
SALINITY (0/00)
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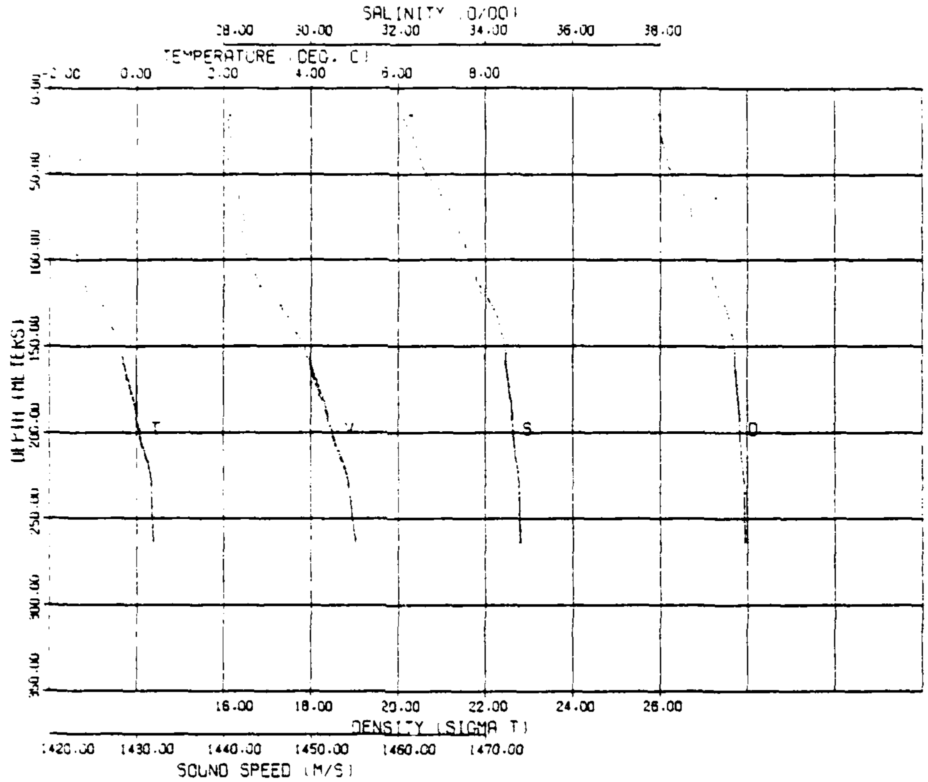
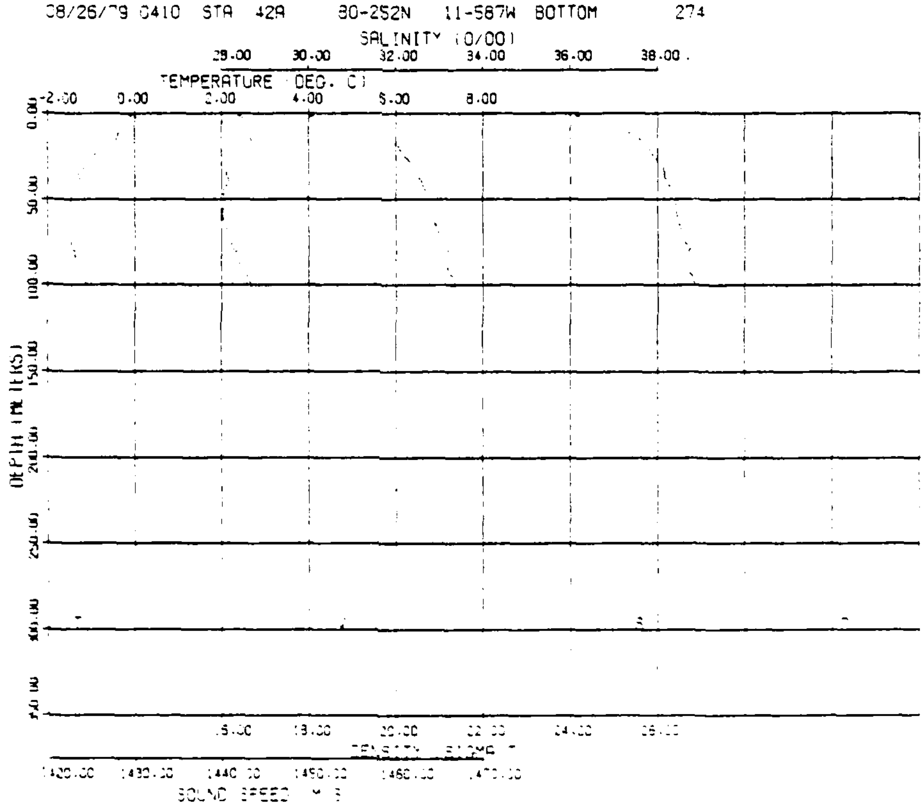
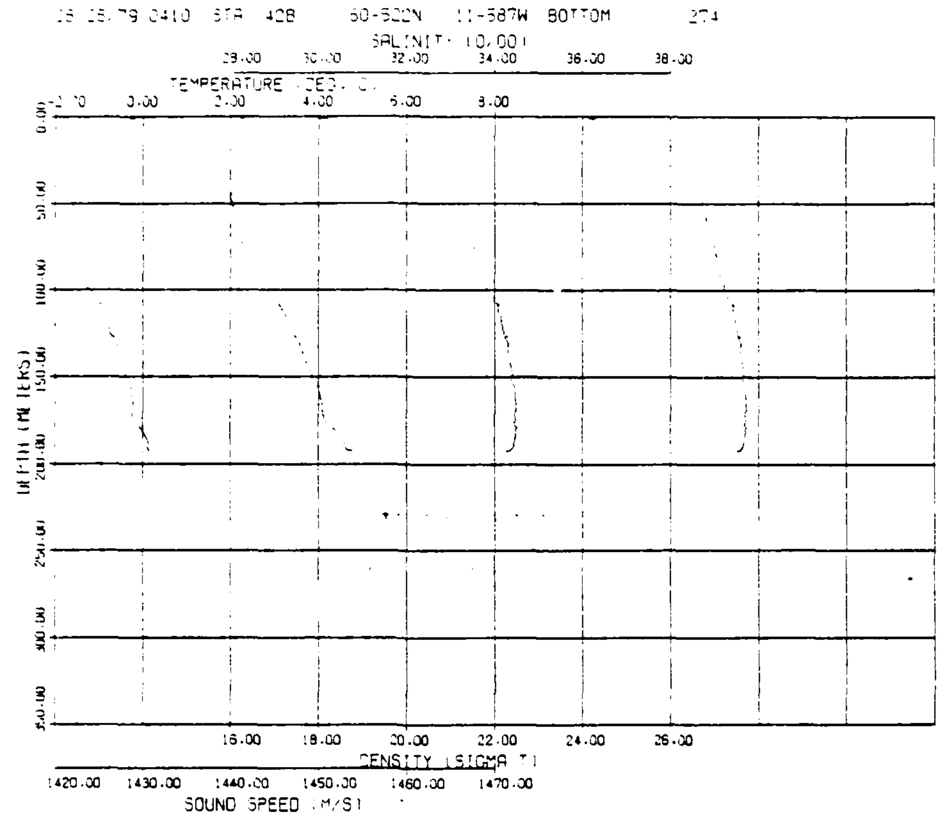
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
S
16.00 18.00 20.00 22.00 24.00 26.00
1420.00 1430.00 1440.00 1450.00 1460.00

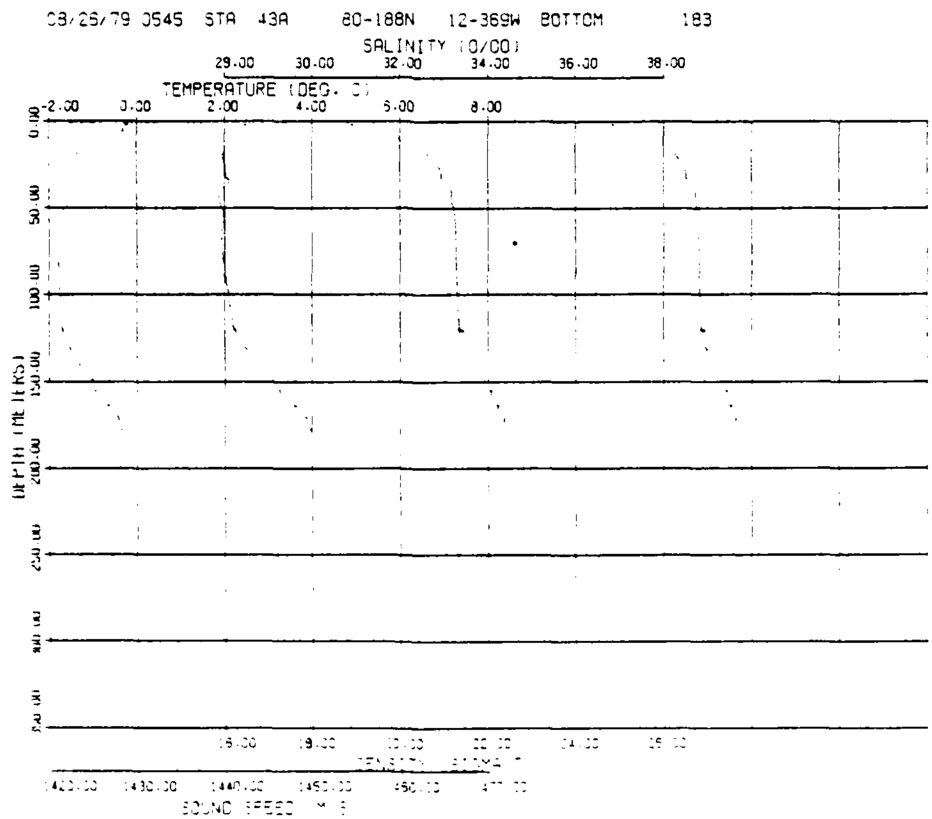
08/26/79 0010 STA 41 80-329N 11-461W BOTTOM 265



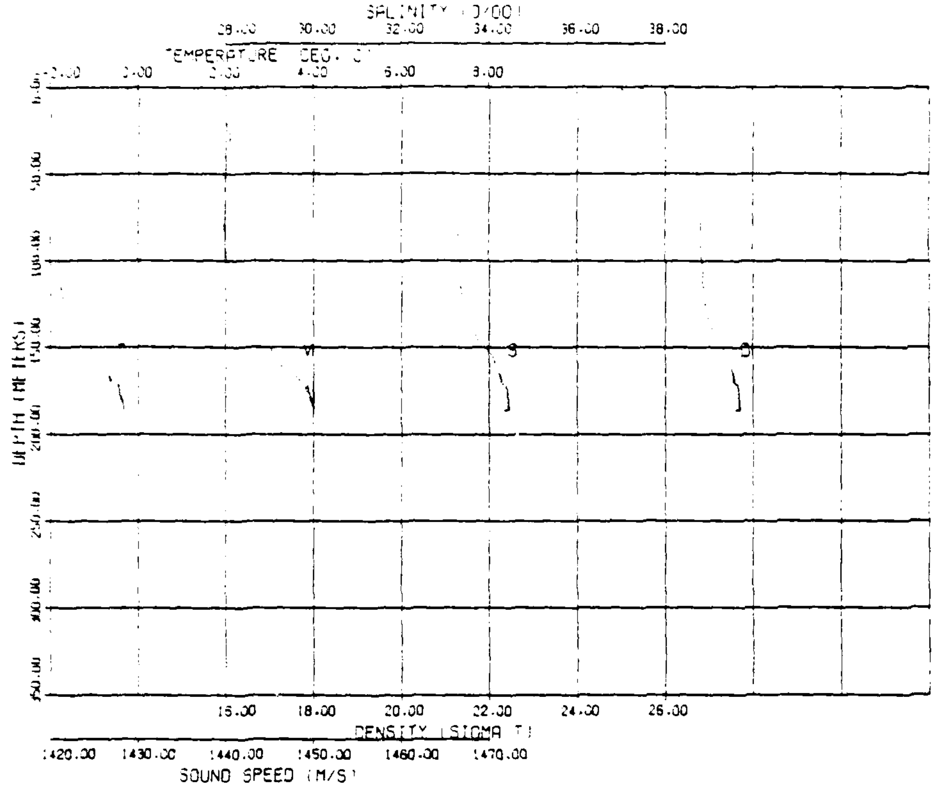
08/26/79 0410 STA 42A 80-252N 11-587W BOTTOM 274



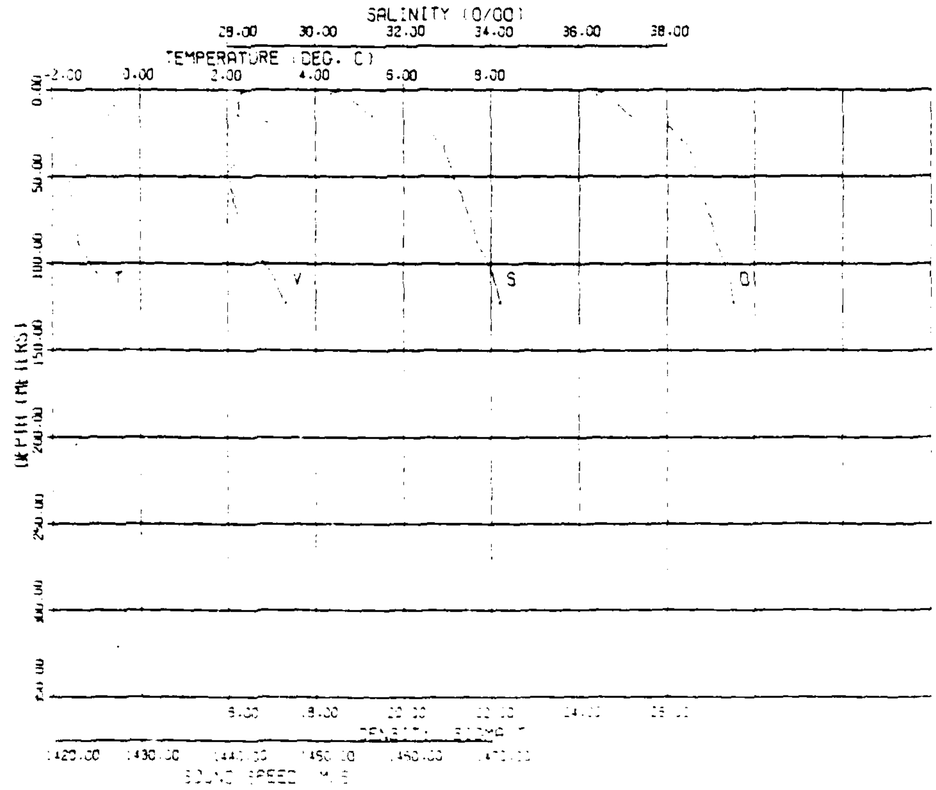

11-587W BOTTOM
SALINITY (0/00)
32.00
34.00
36.00
38.00
TEMPERATURE
4.00
6.00
8.00
DEPTH (METERS)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
16.00
18.00
20.00
22.00
24.00
26.00
DENSITY (SIGMA T)
1420.00
1430.00
1440.00
1450.00
1460.00
1470.00
SOUND SPEED (M/S)


08/26/79 0545 STA 43A 80-188N 12-369W BOTTOM 183
SALINITY (0/00)
29.00
30.00
32.00
34.00
36.00
38.00
TEMPERATURE (DEG. C)
-2.00
0.00
2.00
4.00
6.00
8.00
DEPTH (METERS)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
SOUND SPEED

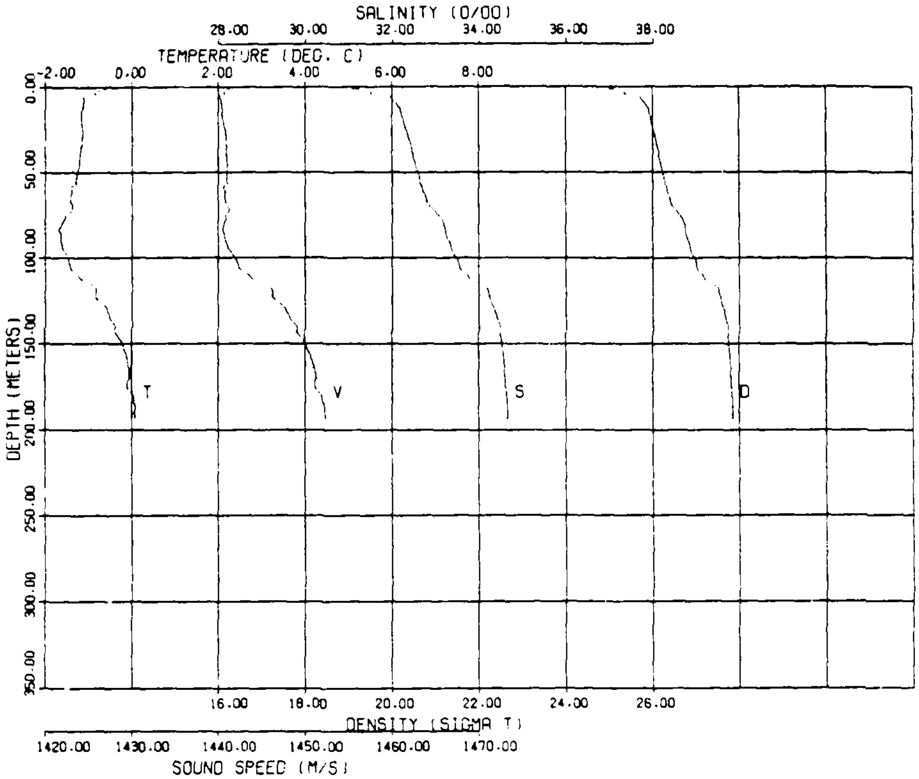
08 26/79 0600 STA 43B 30-18BN 12-36SW BOTTOM 193



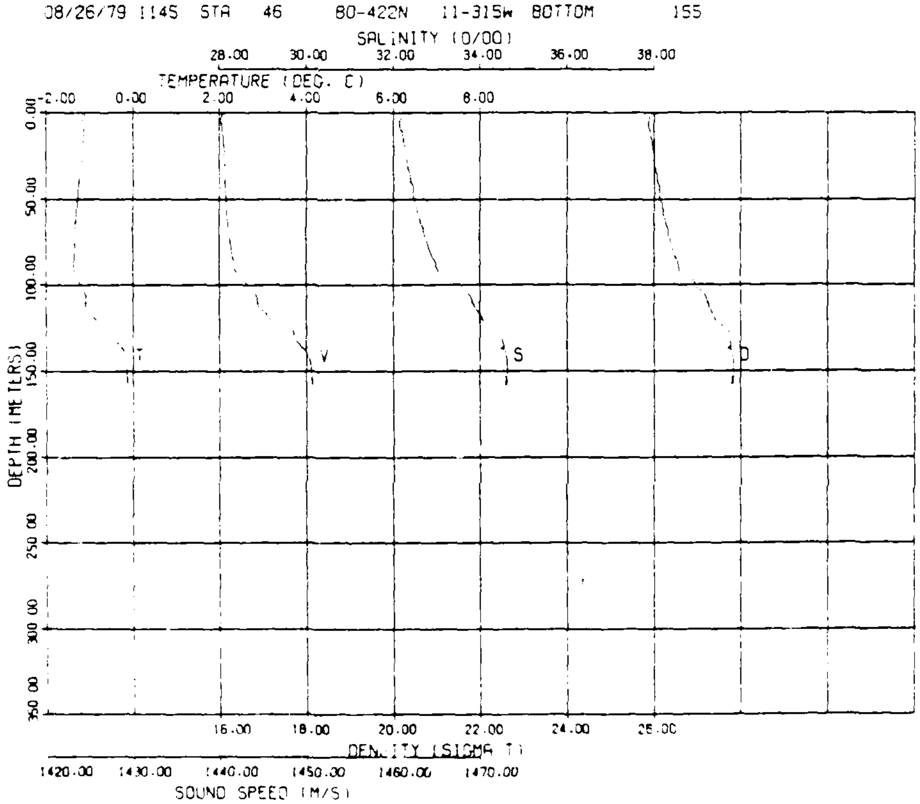
08/26/79 0810 STA 44 30-27CN 12-068W BOTTOM 265



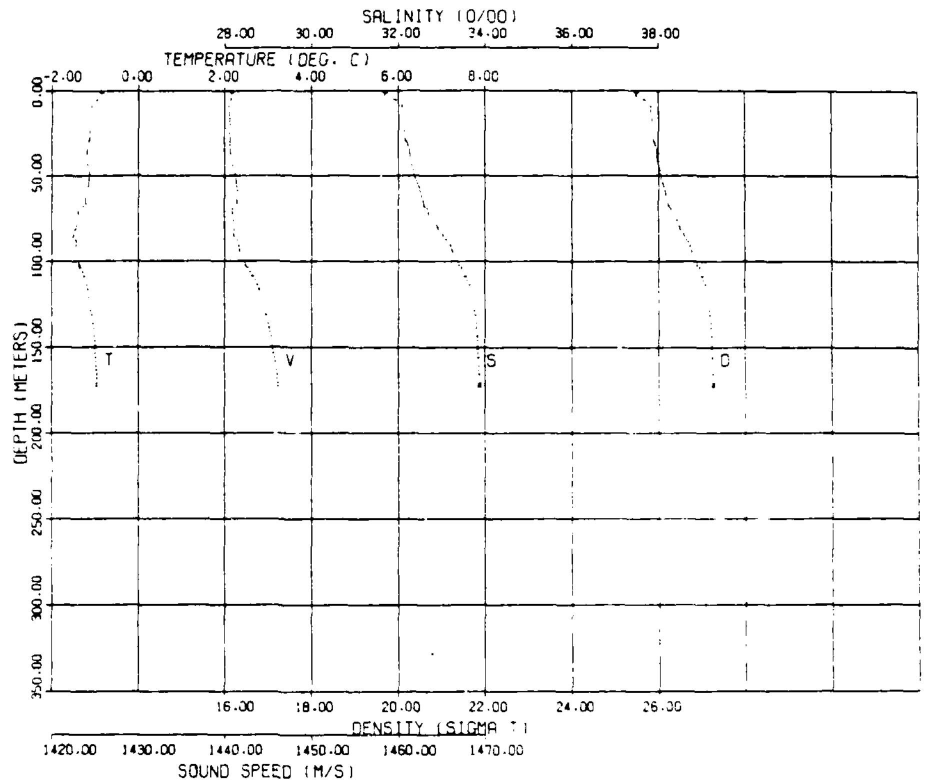
08/26/79 1005 STA 45 80-376N 11-587W BOTTOM 256



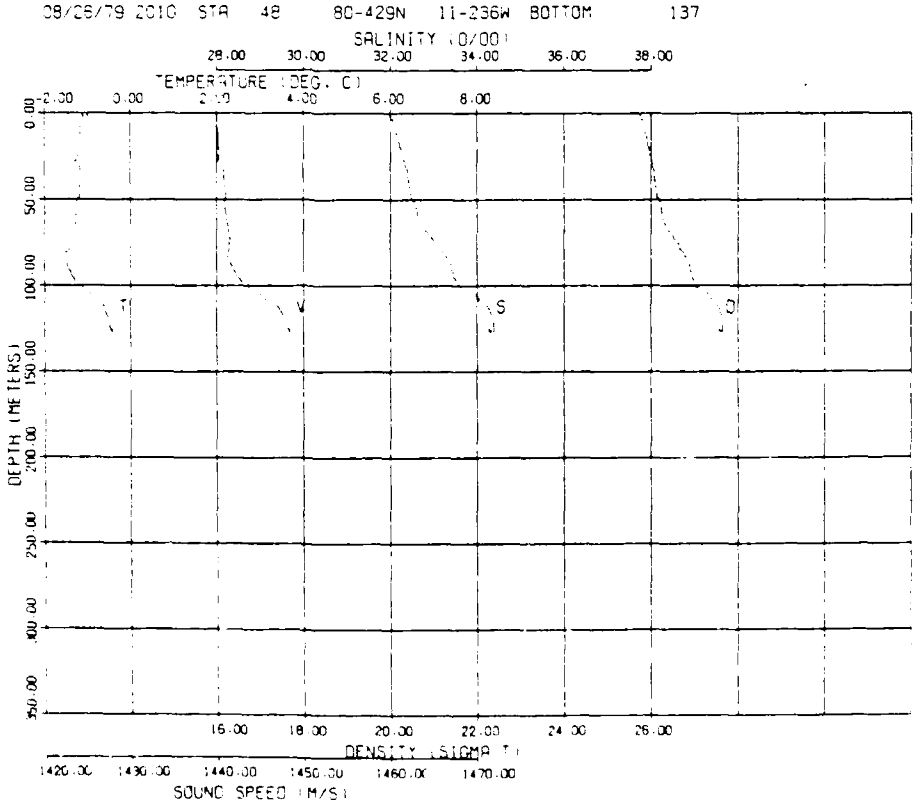
08/26/79 1145 STA 46 80-422N 11-315W BOTTOM 155



08/26/79 1510 STA 47 80-504N 10-567W BOTTOM 165



08/26/79 2010 STA 48 80-429N 11-236W BOTTOM 137



AD-A097 808 SCIENCE APPLICATIONS INC LA JOLLA CA F/G 8/10
OCEANOGRAPHIC DATA FROM NORTHWEST GREENLAND SEA: ARCTIC EAST 19--ETC(U)
1981 J L NEWTON, L E PIPER N00014-79-C-0689
UNCLASSIFIED SAI-202-81-003-LJ NL

2 of 3
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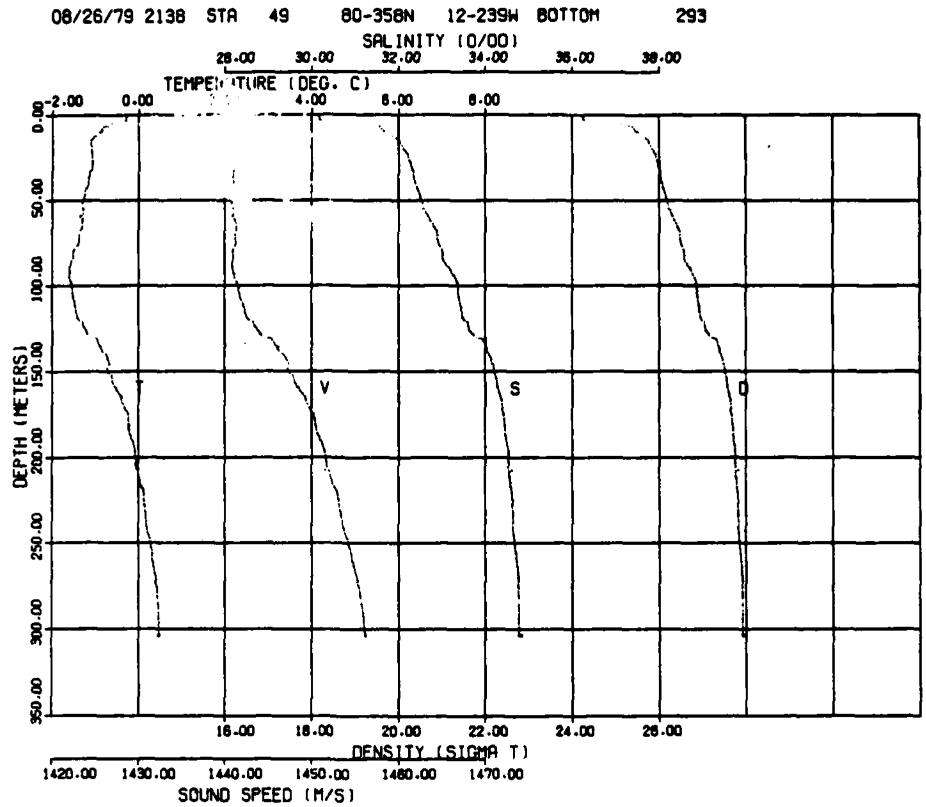
A097808


08/26/79 2138 STA 49 80-358N 12-239W BOTTOM 293
SALINITY (O/OO)
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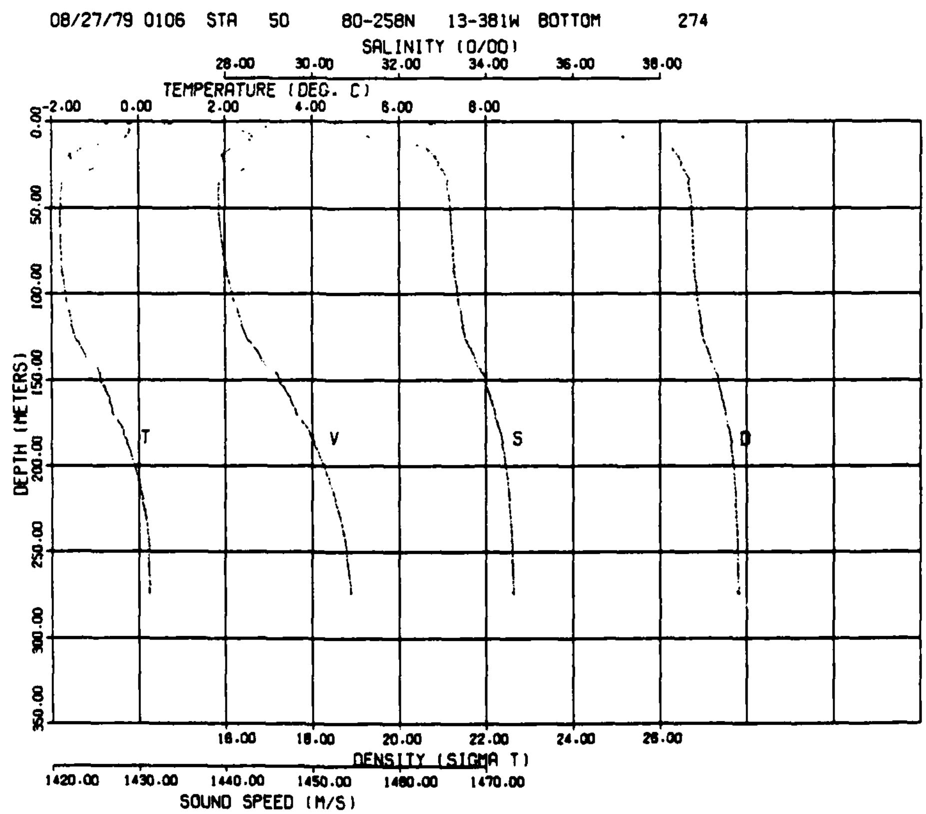
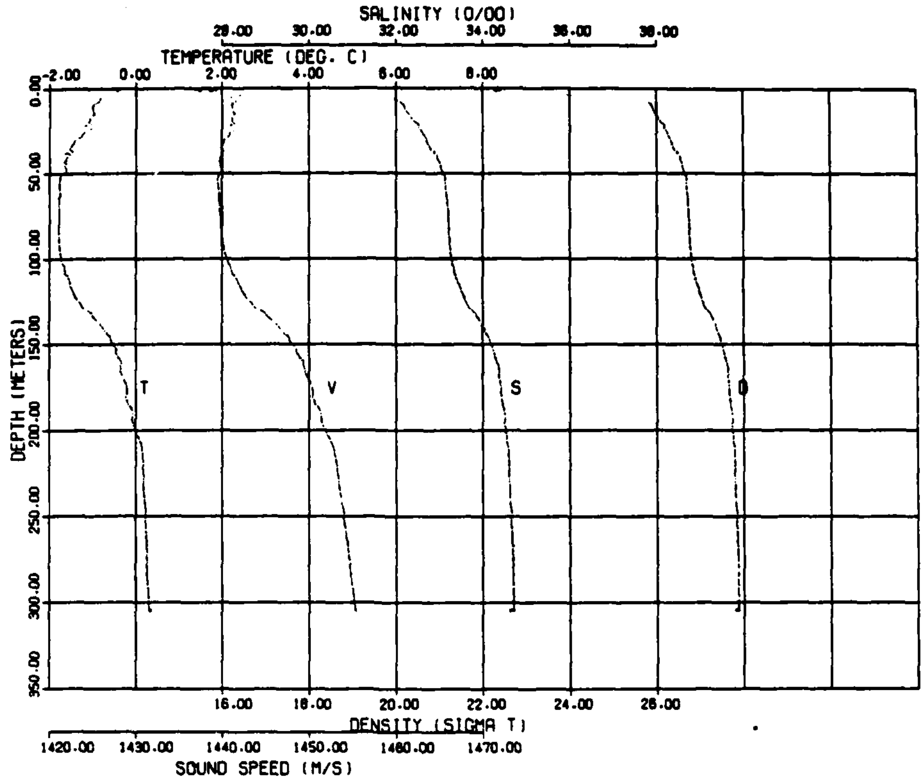
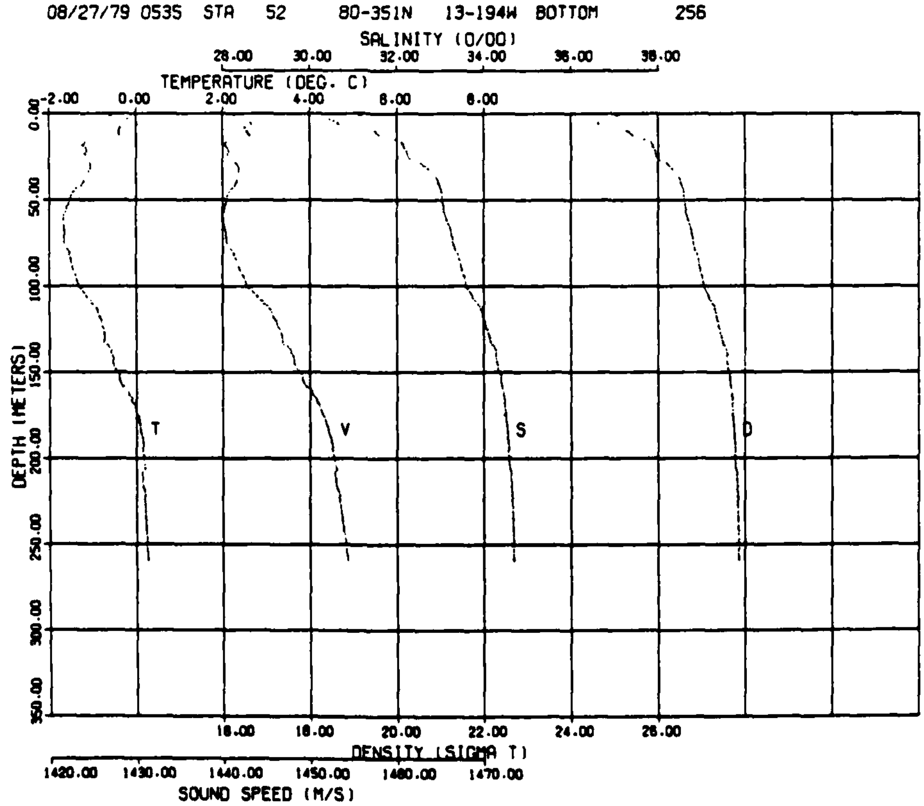
TEMPERATURE (DEG. C)
-2.00 0.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

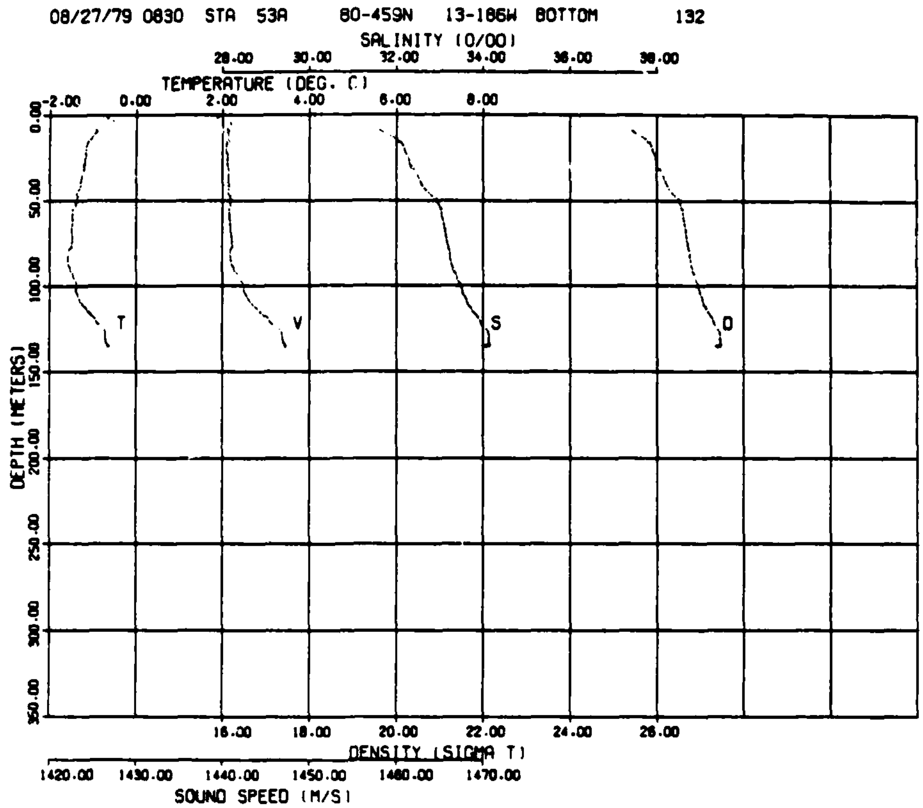

08/27/79 0106 STA 50 80-258N 13-381W BOTTOM 274
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

08/27/79 0230 STA 51 80-302N 14-252W BOTTOM 310

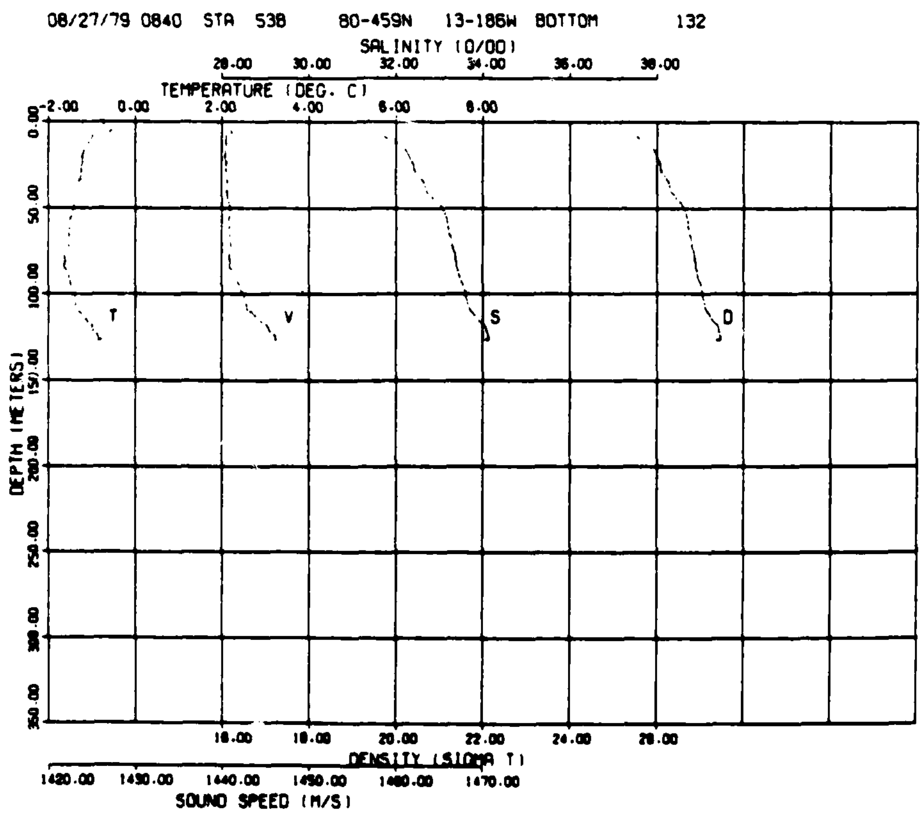


08/27/79 0535 STA 52 80-351N 13-194W BOTTOM 256



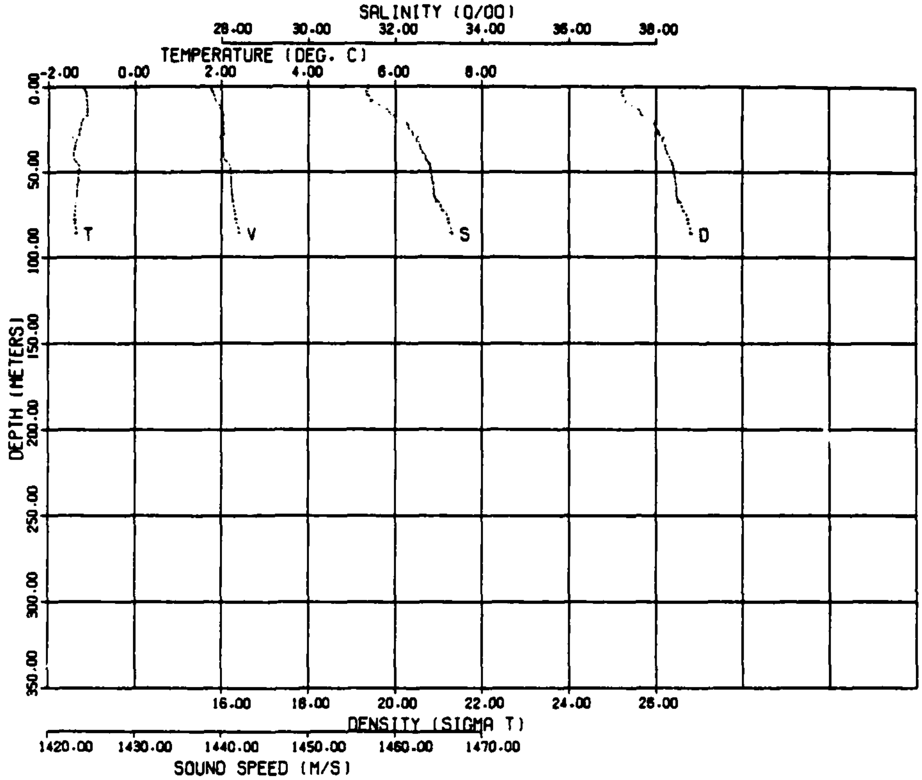


08/27/79 0830 STA 53A 80-459N 13-186W BOTTOM 132
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

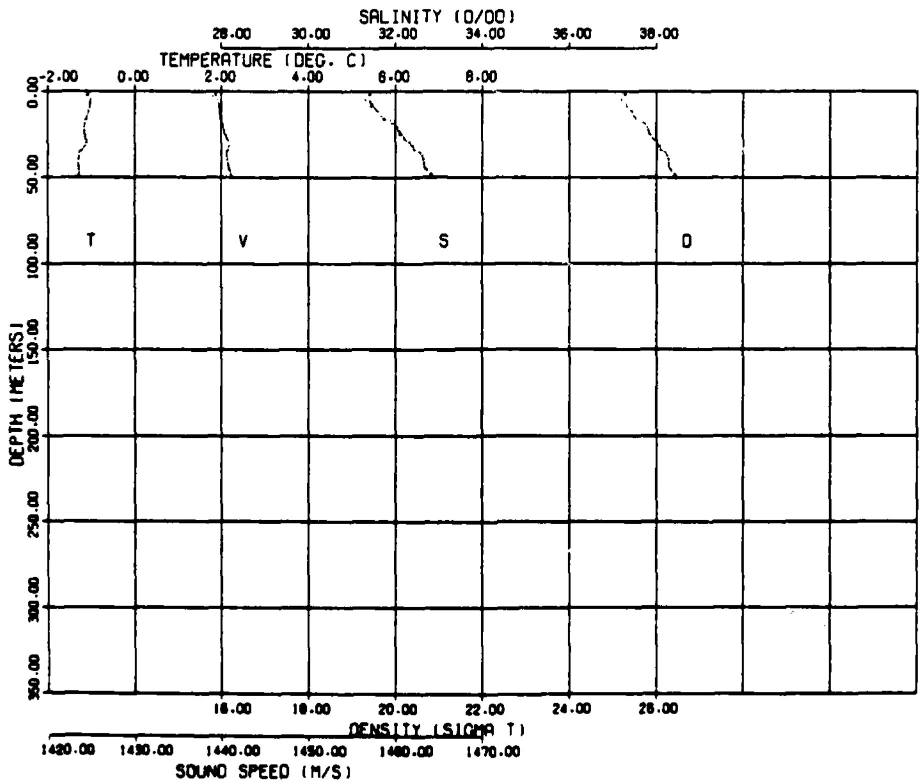


08/27/79 0840 STA 53B 80-459N 13-186W BOTTOM 132
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

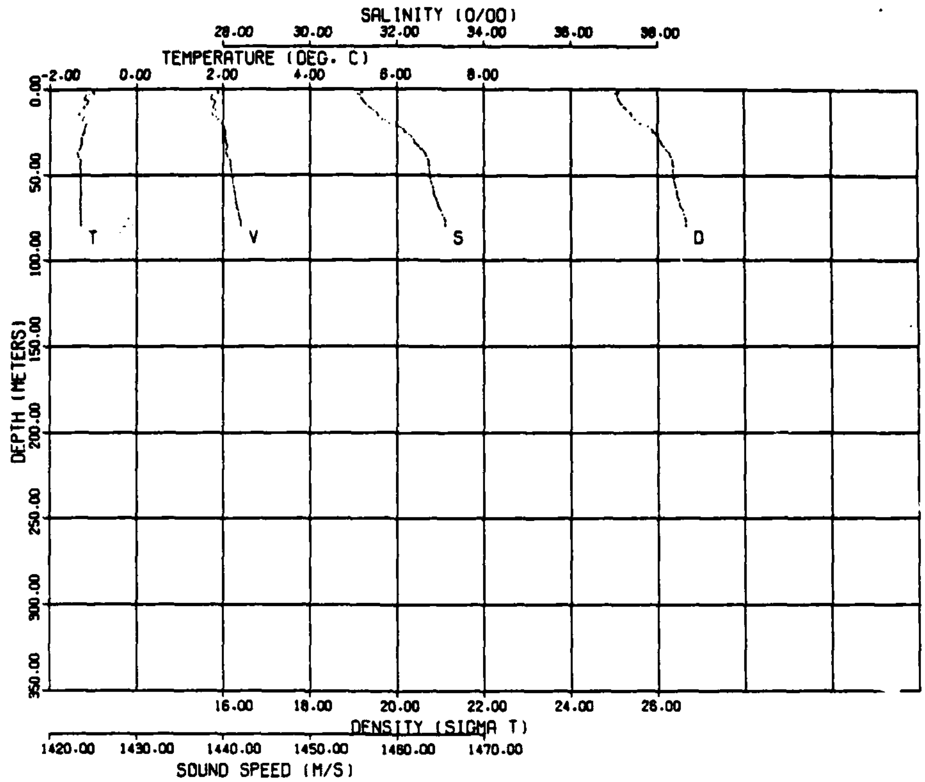
08/27/79 1040 STA 54 80-481N 12-481W BOTTOM 82



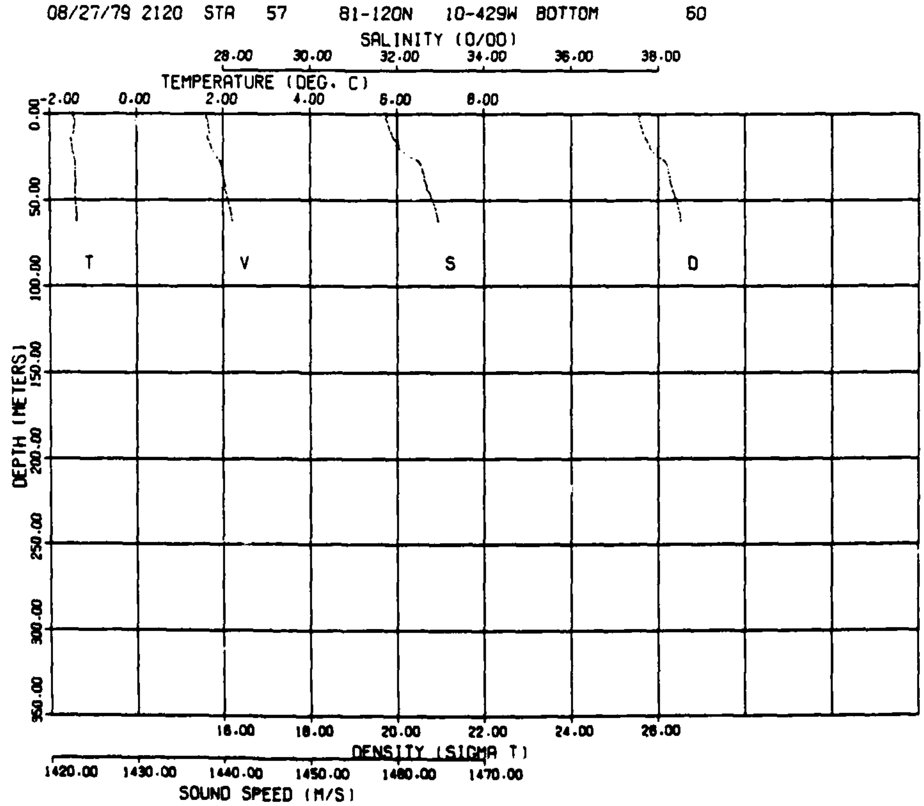
08/27/79 1300 STA 55 80-556N 12-368W BOTTOM 44



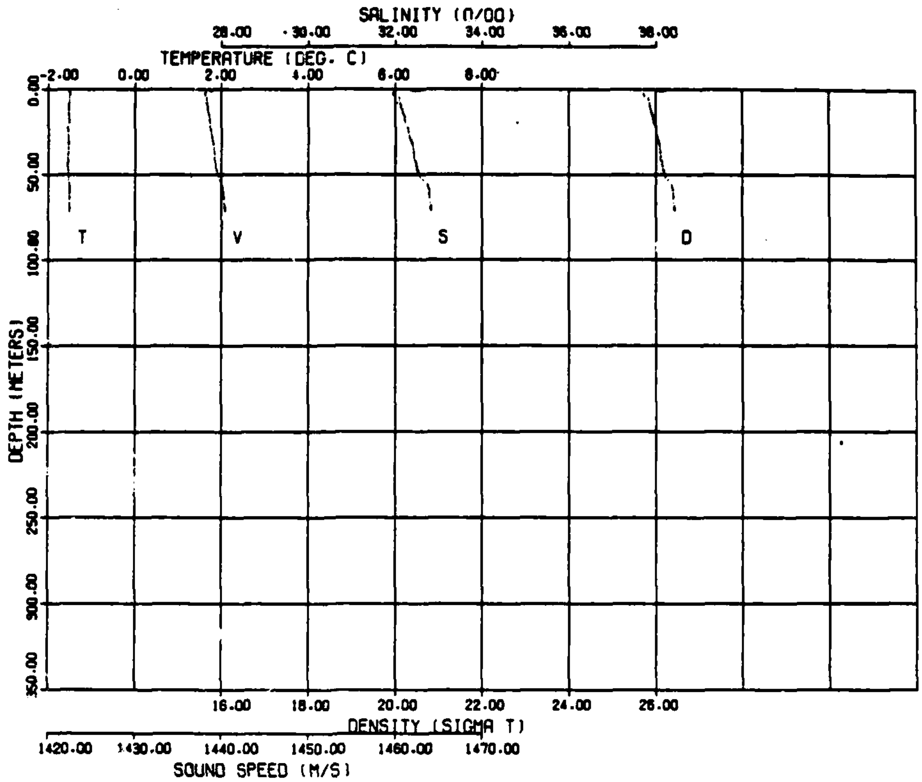
08/27/79 1516 STA 56 81-026N 11-418W BOTTOM 73



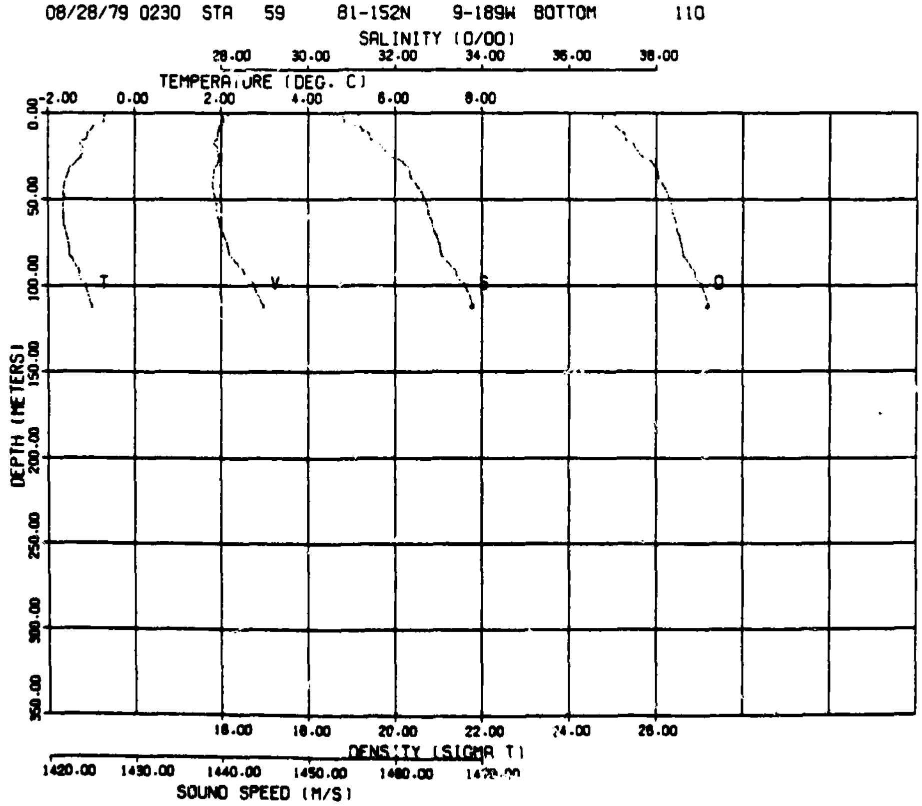
08/27/79 2120 STA 57 81-120N 10-429W BOTTOM 60



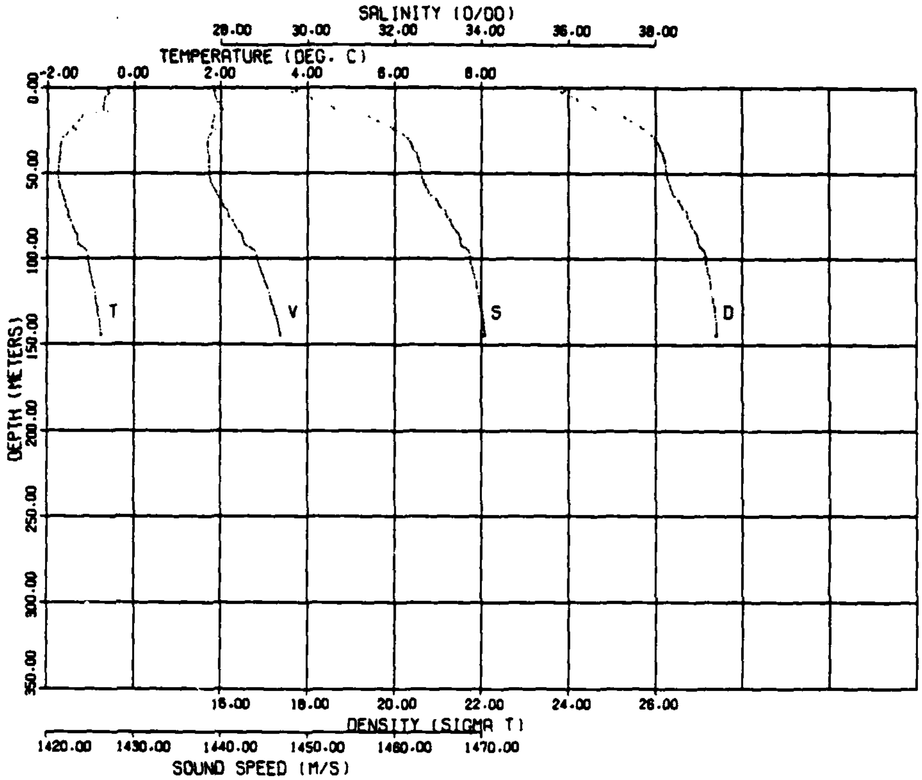
08/27/79 2306 STA 58 81-127N 9-433W BOTTOM 64



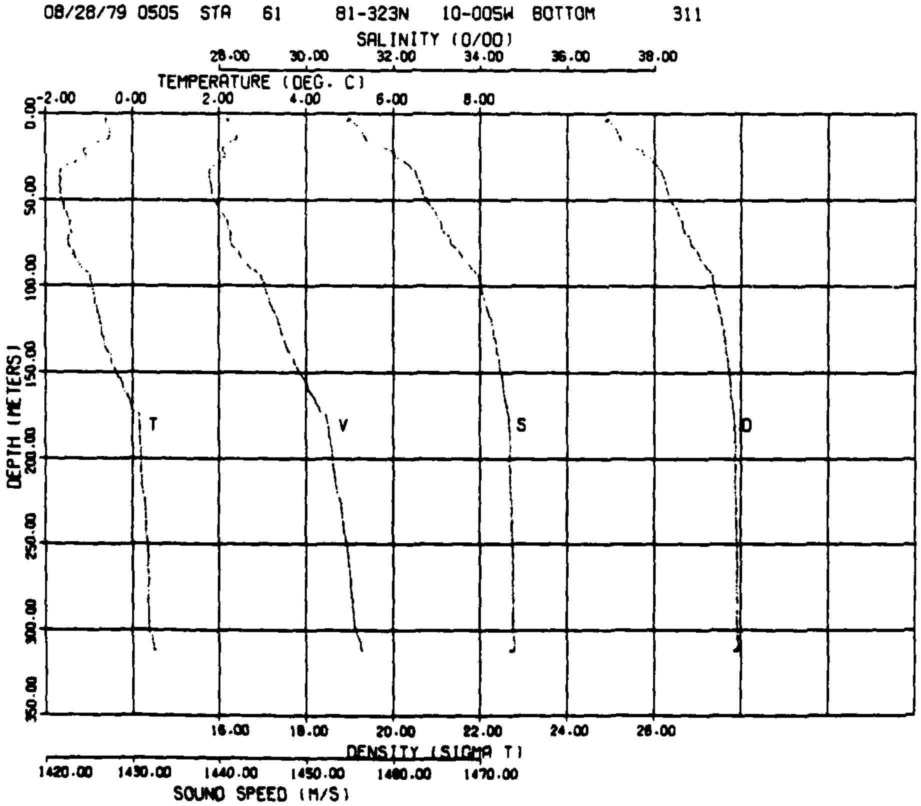
08/28/79 0230 STA 59 81-152N 9-189W BOTTOM 110



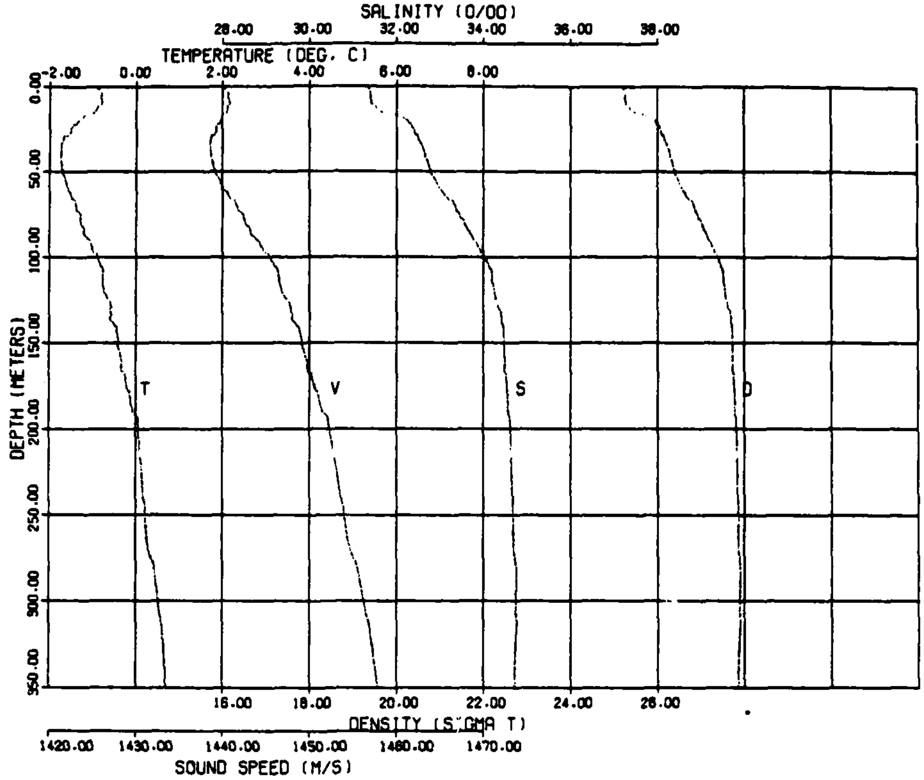
08/28/79 0340 STA 60 81-233N 9-402W BOTTOM 137



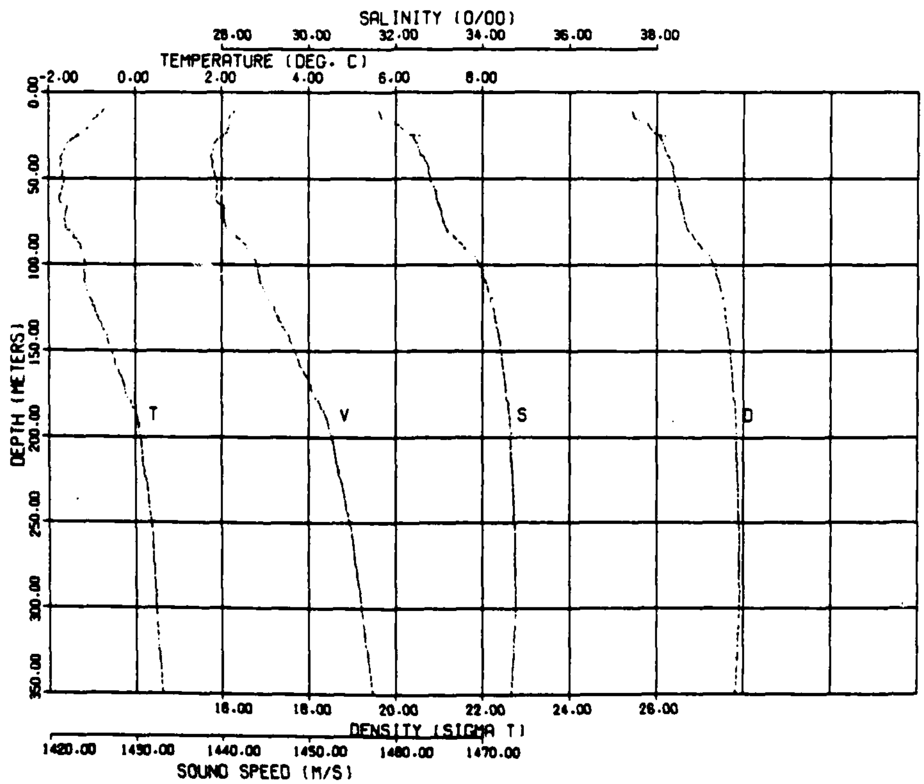
08/28/79 0505 STA 61 81-323N 10-005W BOTTOM 311

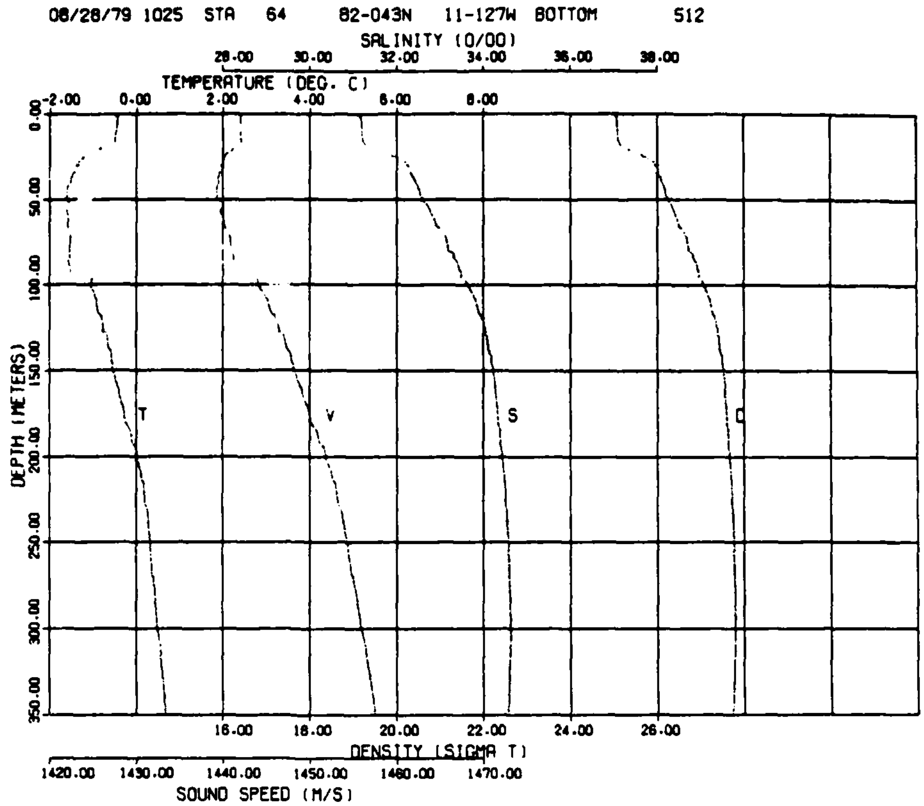


08/28/79 0700 STA 62 81-425N 10-208W BOTTOM 393



08/28/79 0815 STA 63 81-528N 10-209W BOTTOM 2194




08/28/79 1025 STA 64 82-043N 11-127W BOTTOM 512
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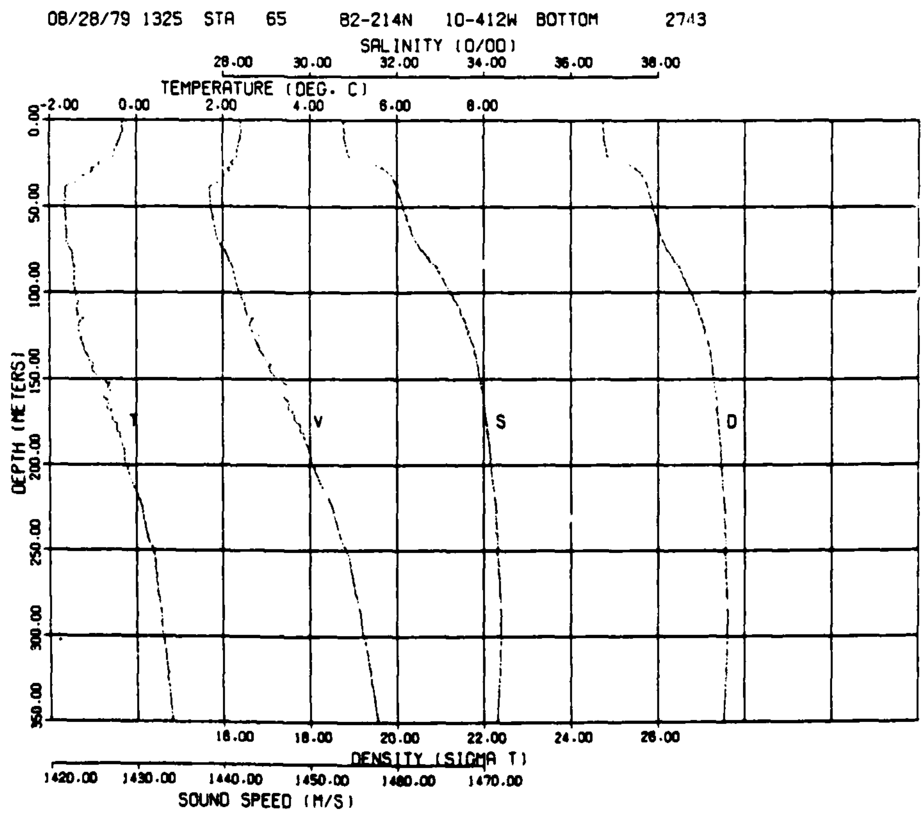
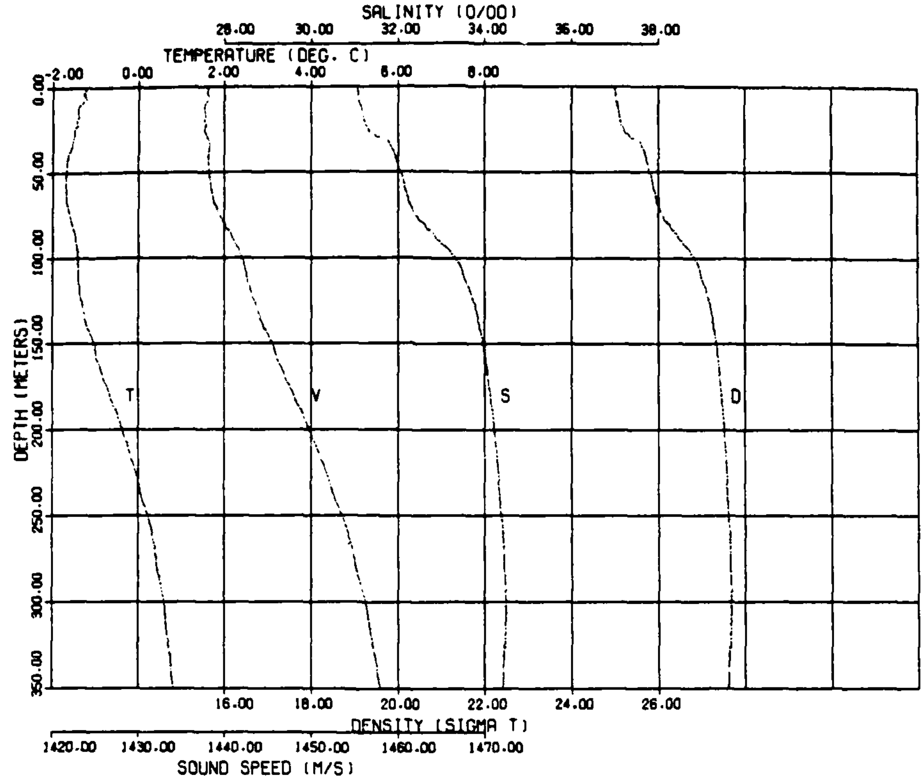
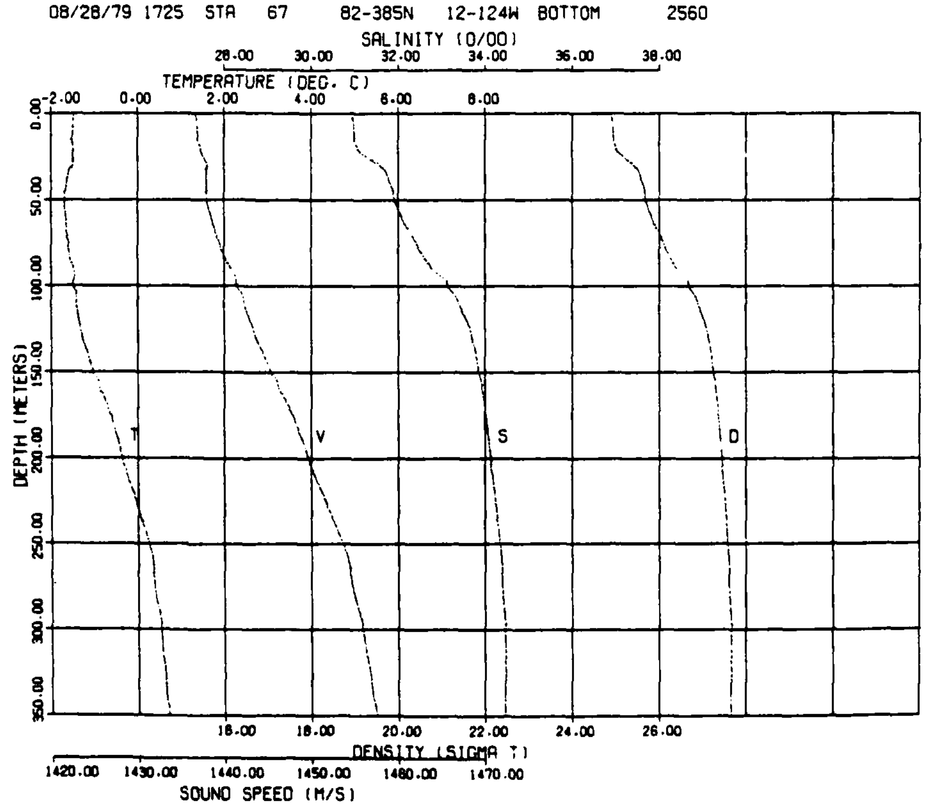
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


08/28/79 1325 STA 65 82-214N 10-412W BOTTOM 2743
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

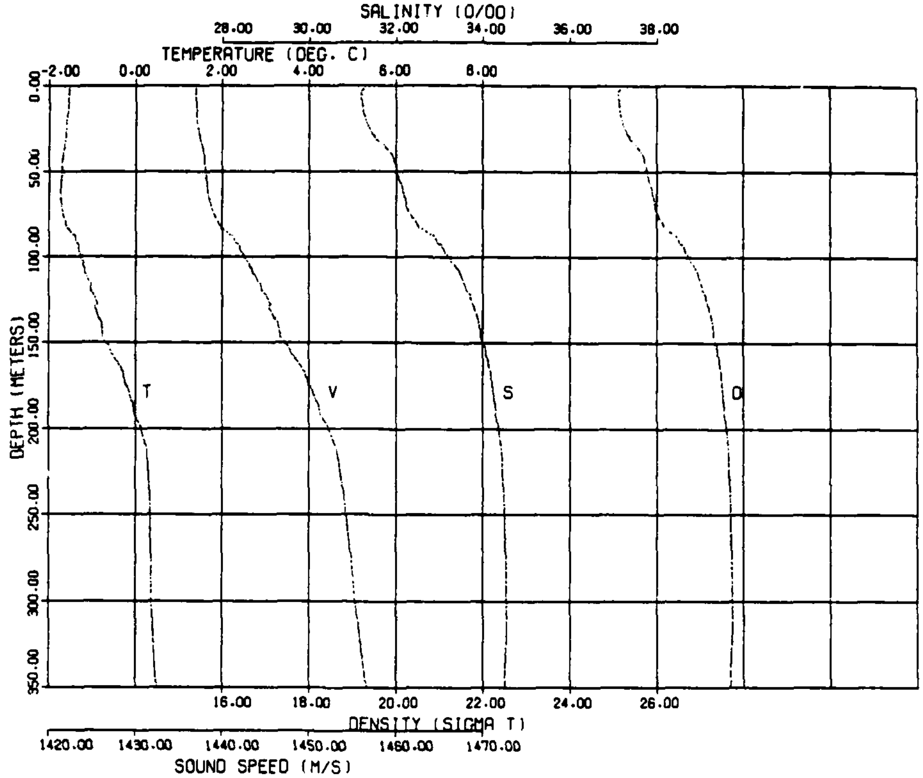
08/28/79 1517 STA 66 82-346N 11-120W BOTTOM 2835



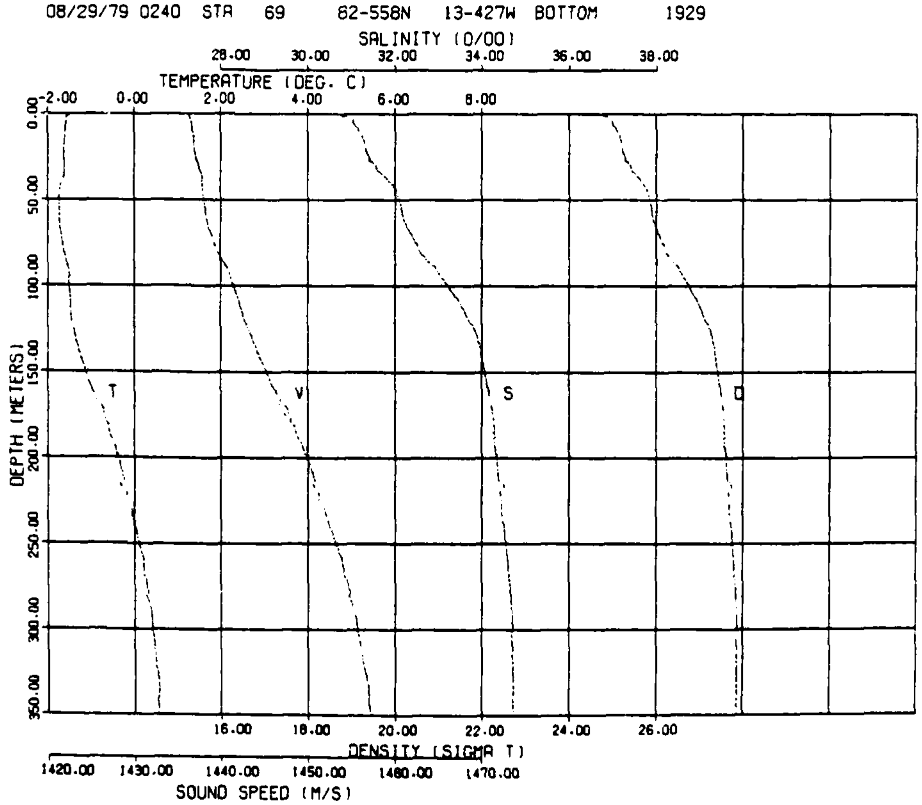
08/28/79 1725 STA 67 82-385N 12-124W BOTTOM 2560

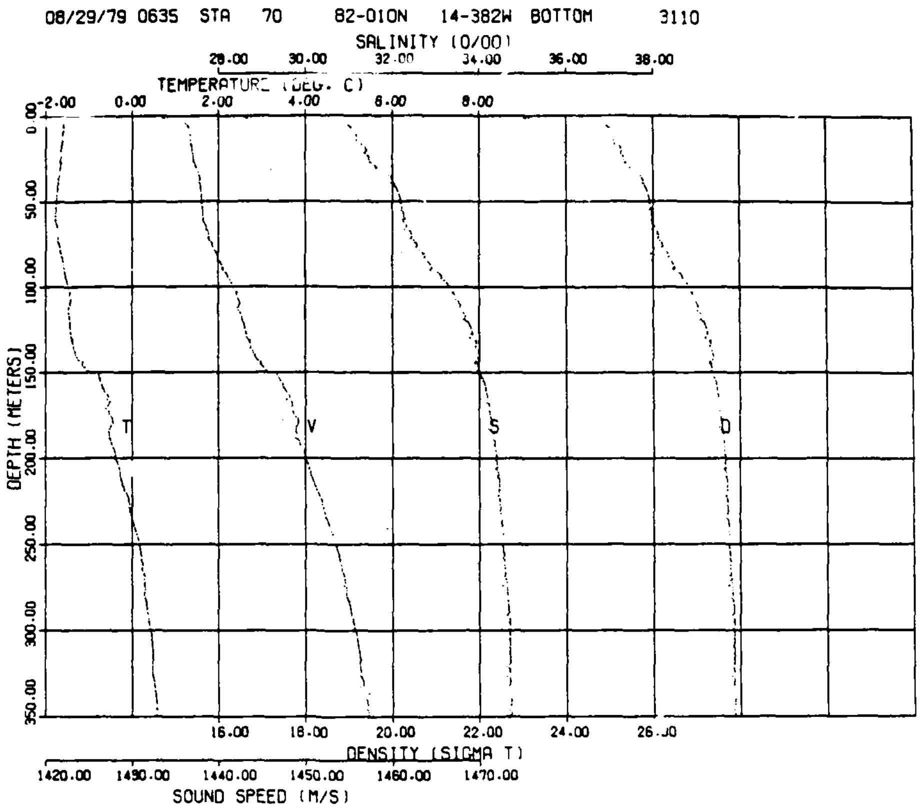


08/28/79 2200 STA 68 82-496N 13-328W BOTTOM 2542

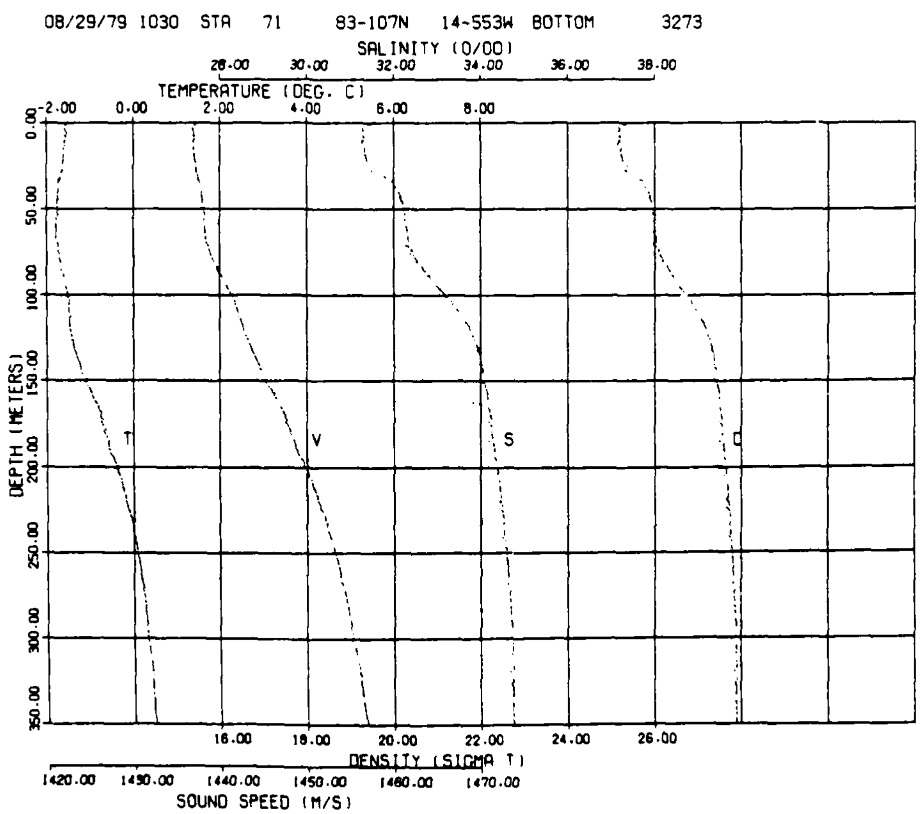


08/29/79 0240 STA 69 82-558N 13-427W BOTTOM 1929

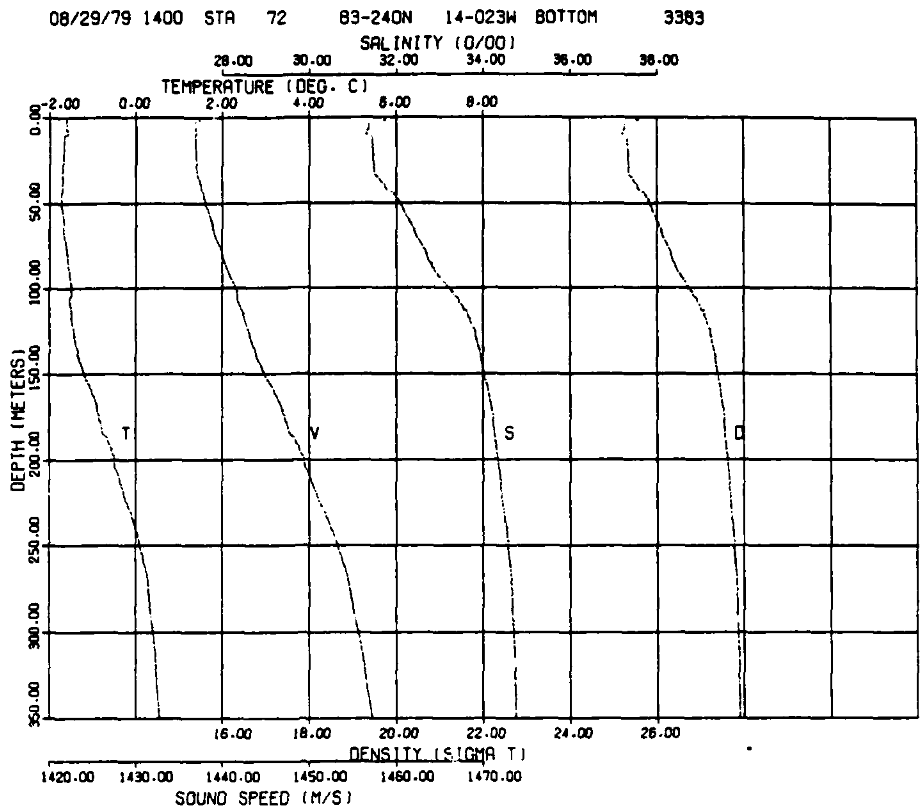


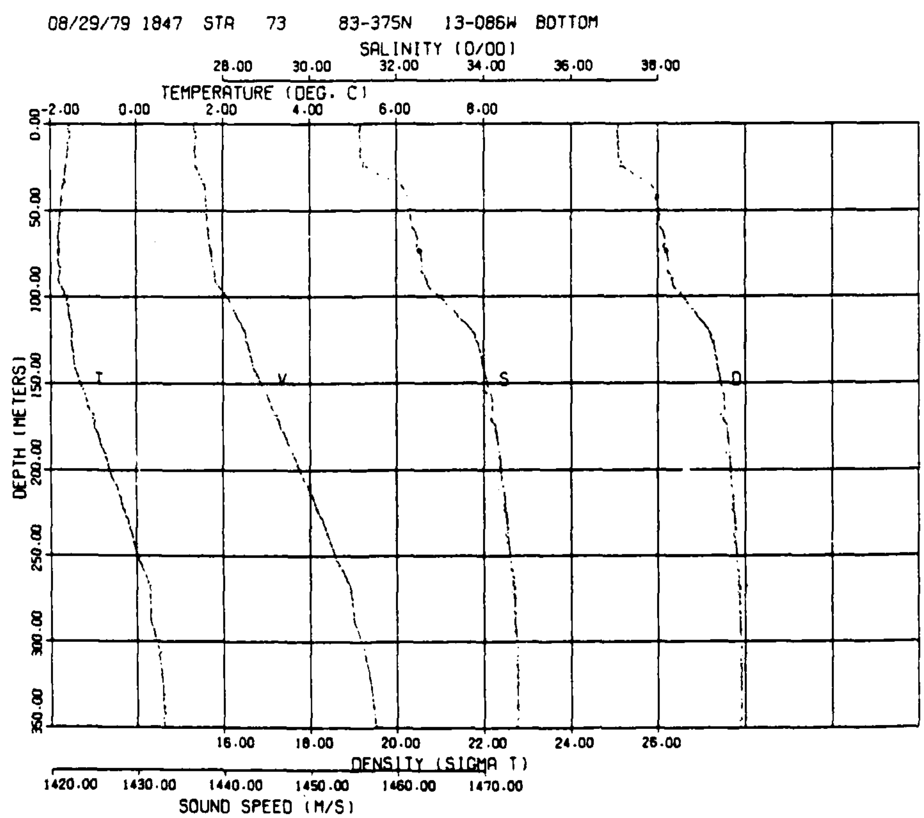


08/29/79 0635 STA 70 82-010N 14-382W BOTTOM 3110
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

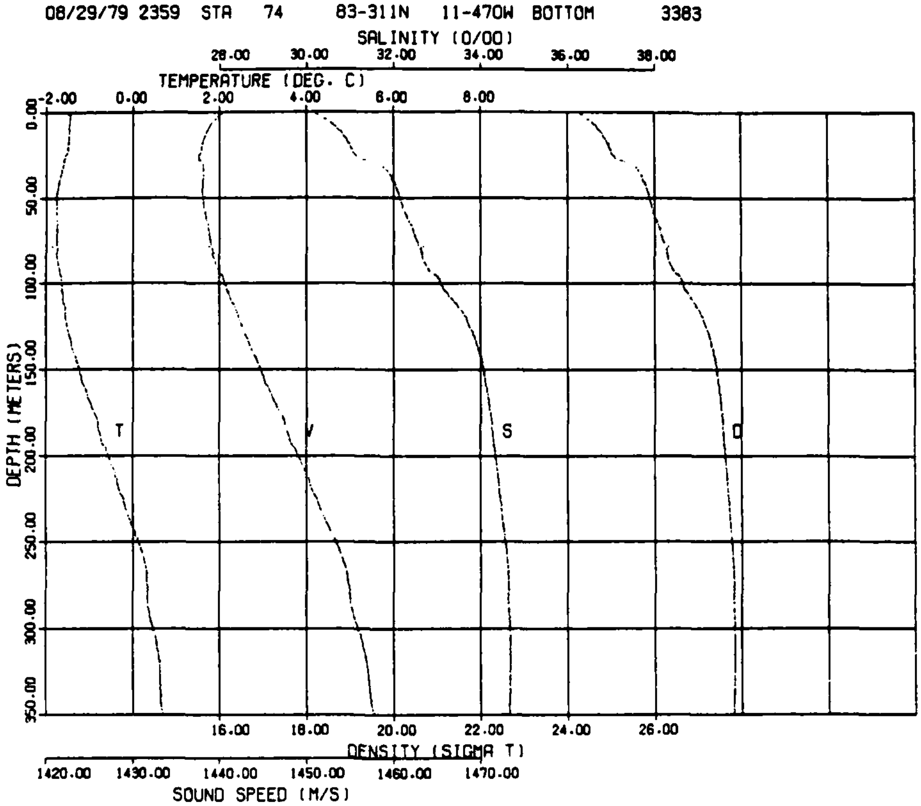


08/29/79 1030 STA 71 83-107N 14-553W BOTTOM 3273
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

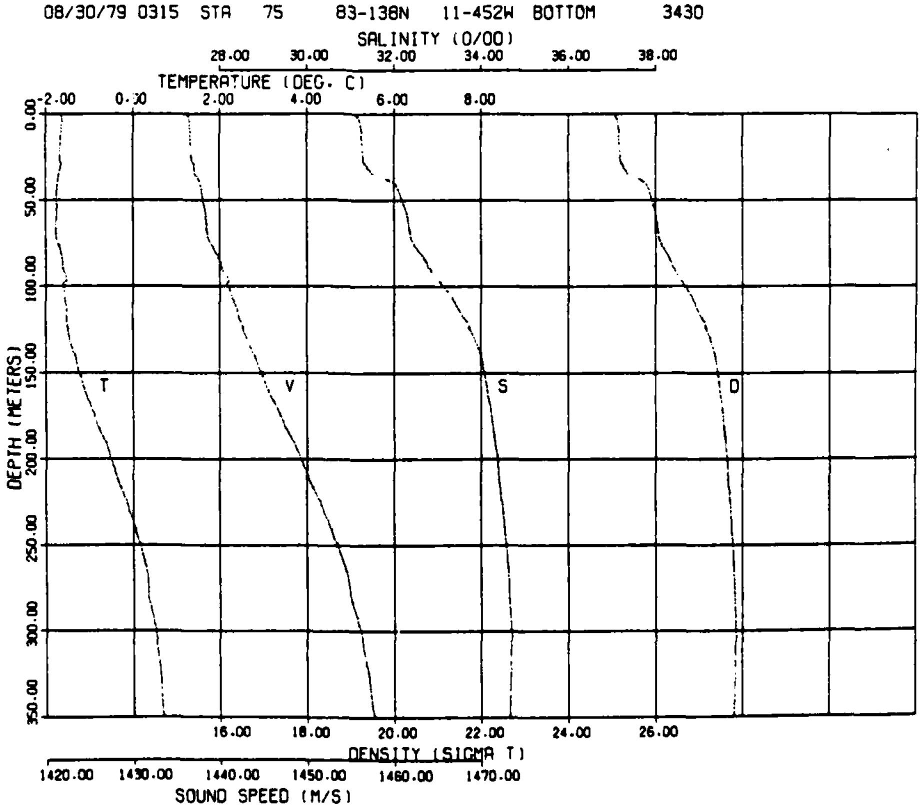

08/29/79 1400 STA 72 83-240N 14-023W BOTTOM 3383
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


08/29/79 1847 STA 73 83-375N 13-086W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

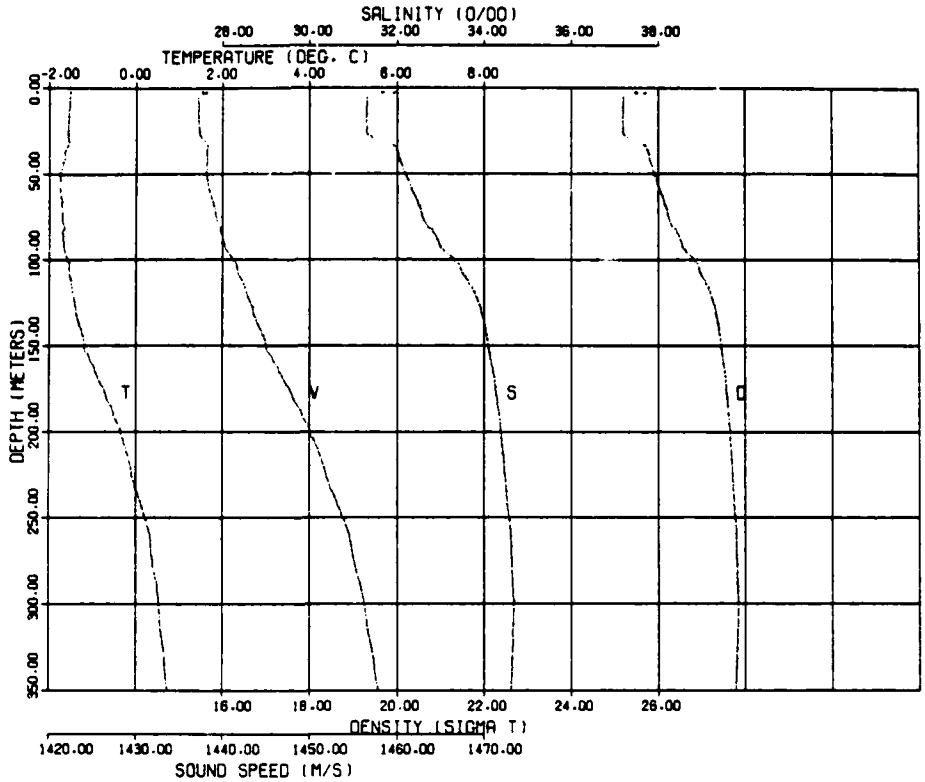
08/29/79 2359 STA 74 83-311N 11-470W BOTTOM 3383



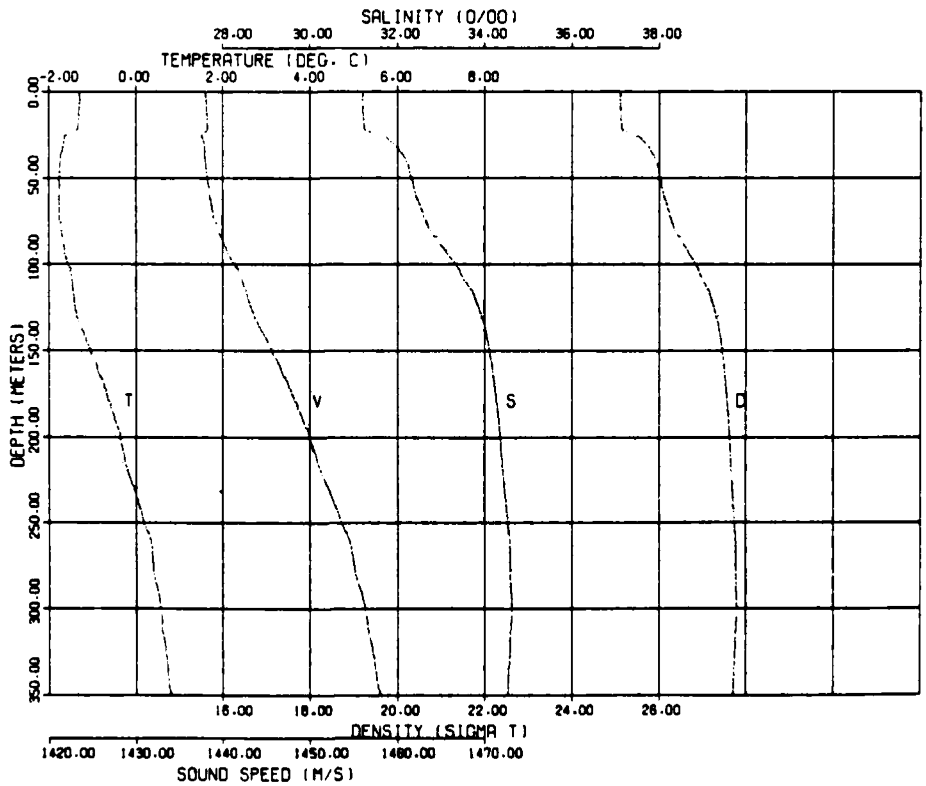
08/30/79 0315 STA 75 83-138N 11-452W BOTTOM 3430



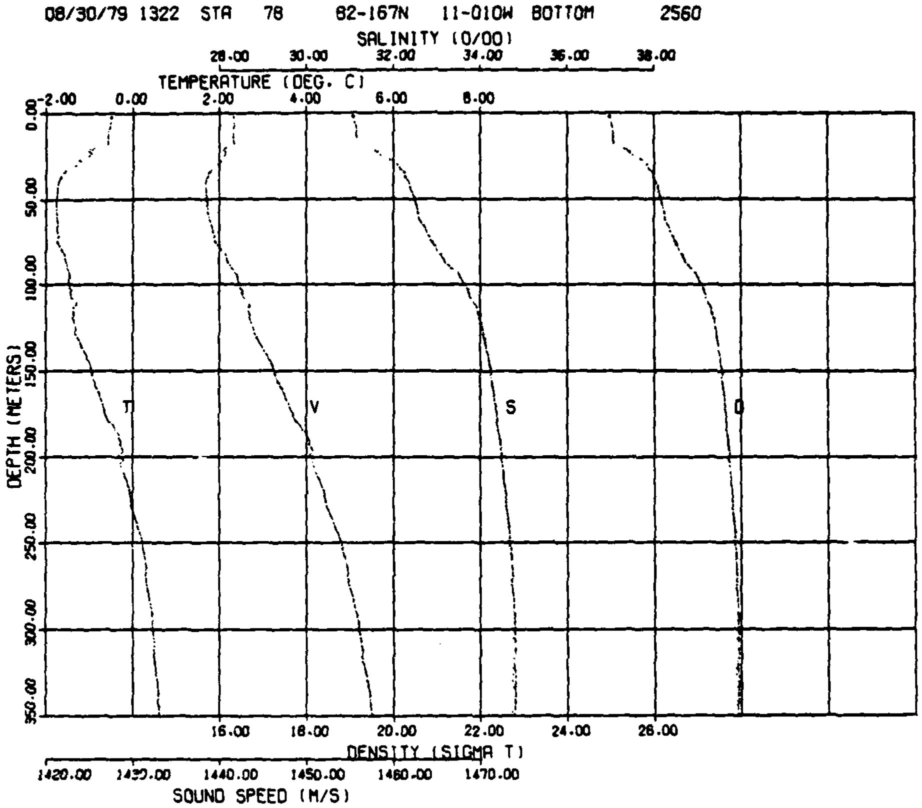
08/30/79 0640 STA 76 82-516N 11-171W BOTTOM 3164



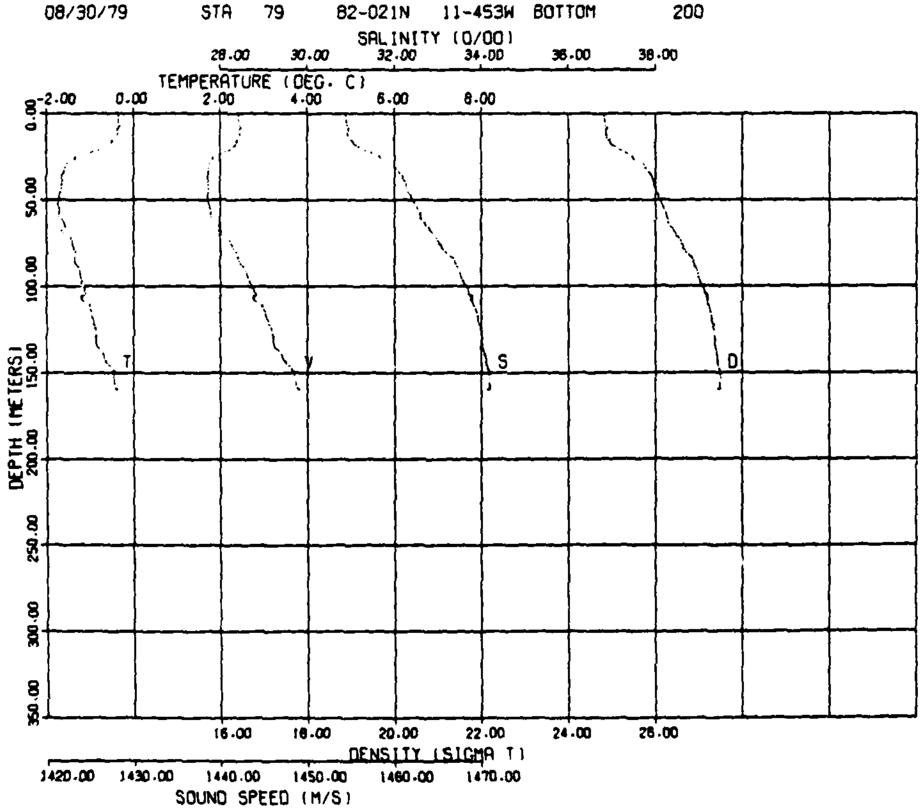
08/30/79 0934 STA 77 82-422N 10-312W BOTTOM 2871



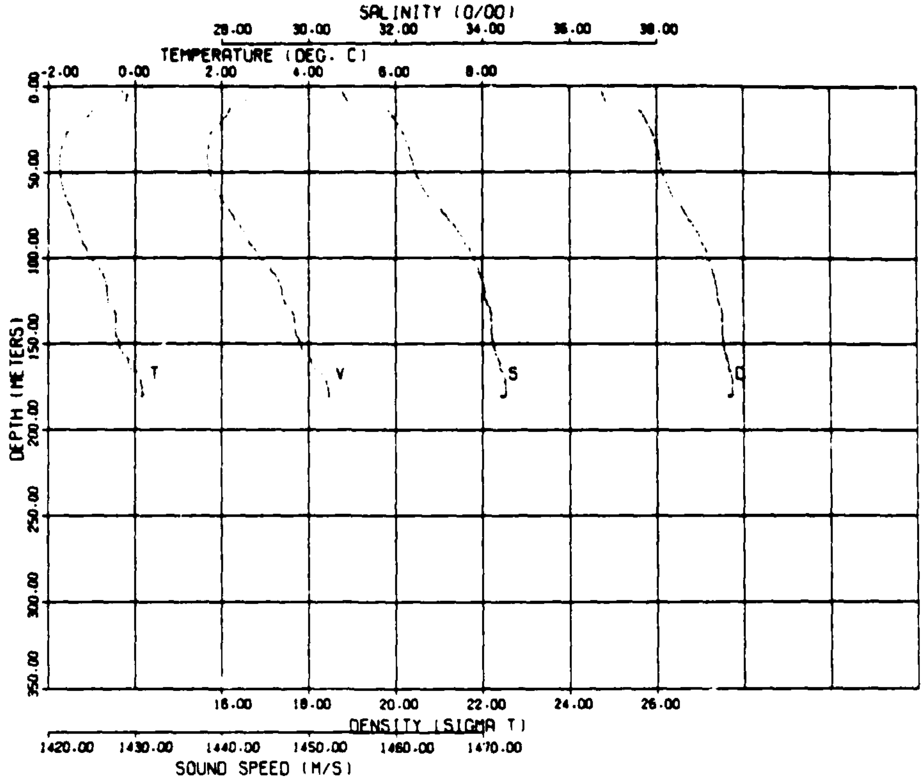
08/30/79 1322 STA 78 82-167N 11-010W BOTTOM 2560



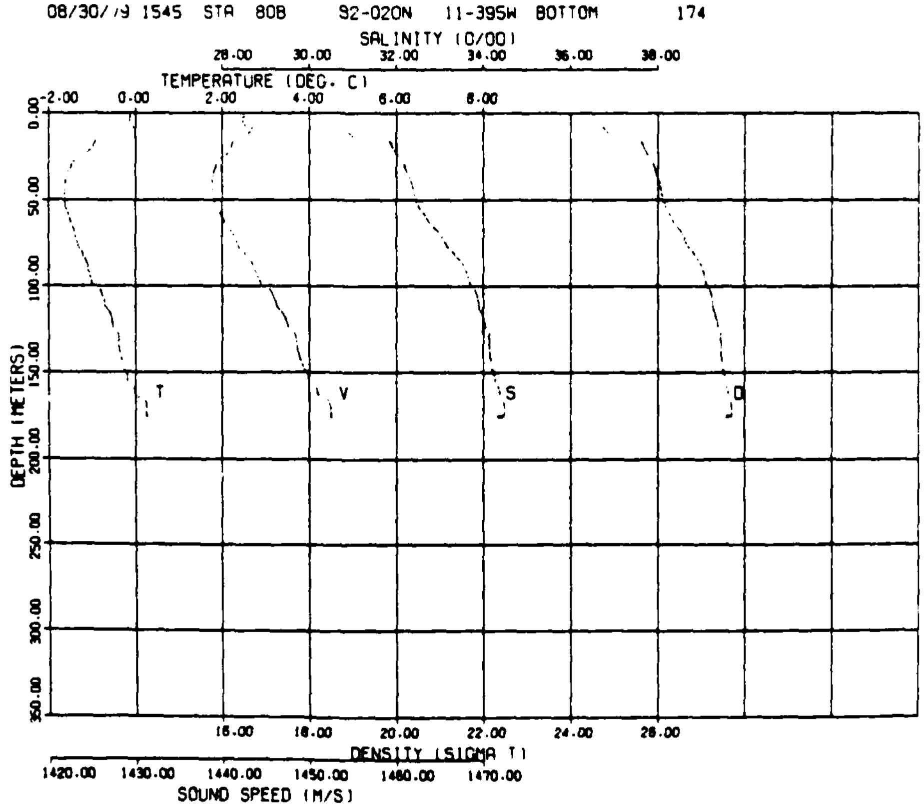
08/30/79 STA 79 82-021N 11-453W BOTTOM 200



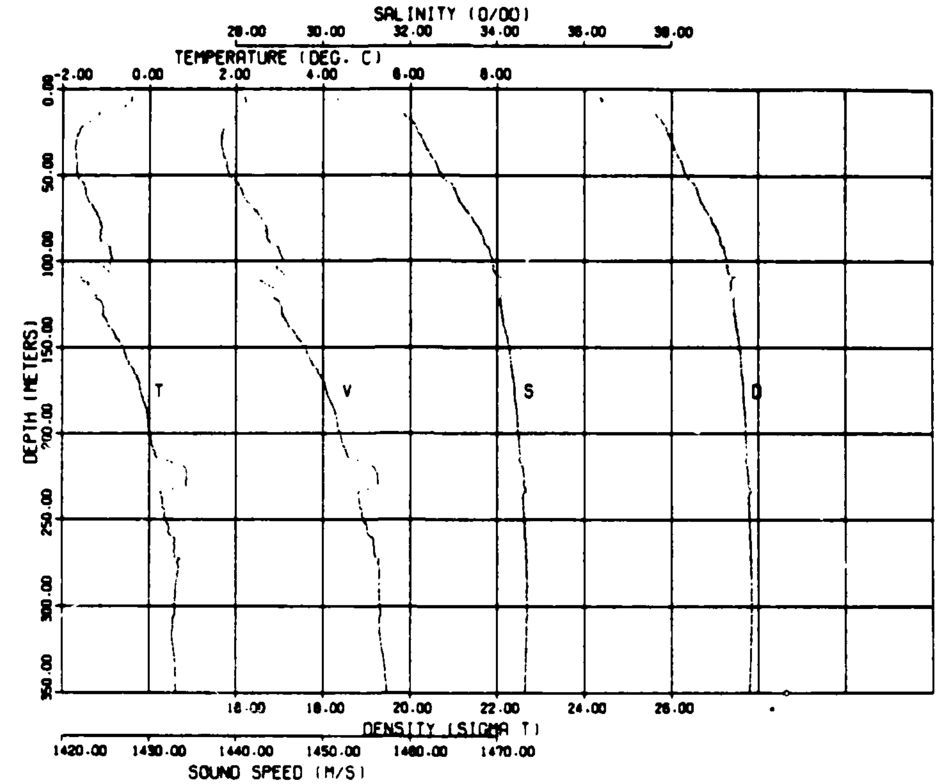
08/30/79 1545 STA 80A 82-020N 11-395W BOTTOM 174



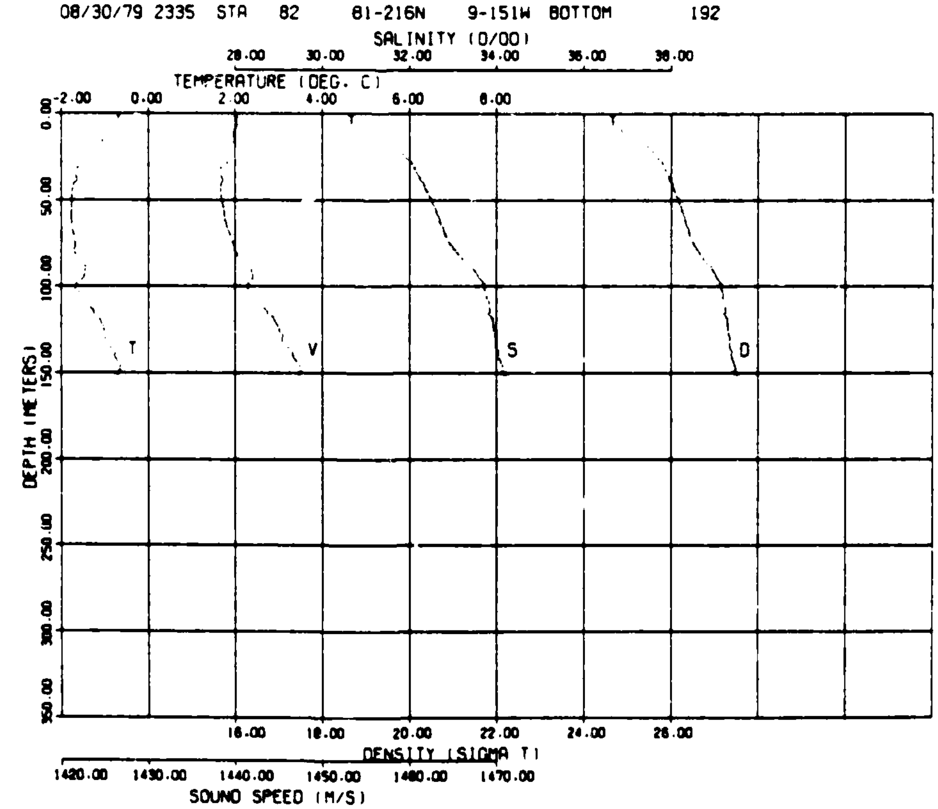
08/30/79 1545 STA 80B 82-020N 11-395W BOTTOM 174



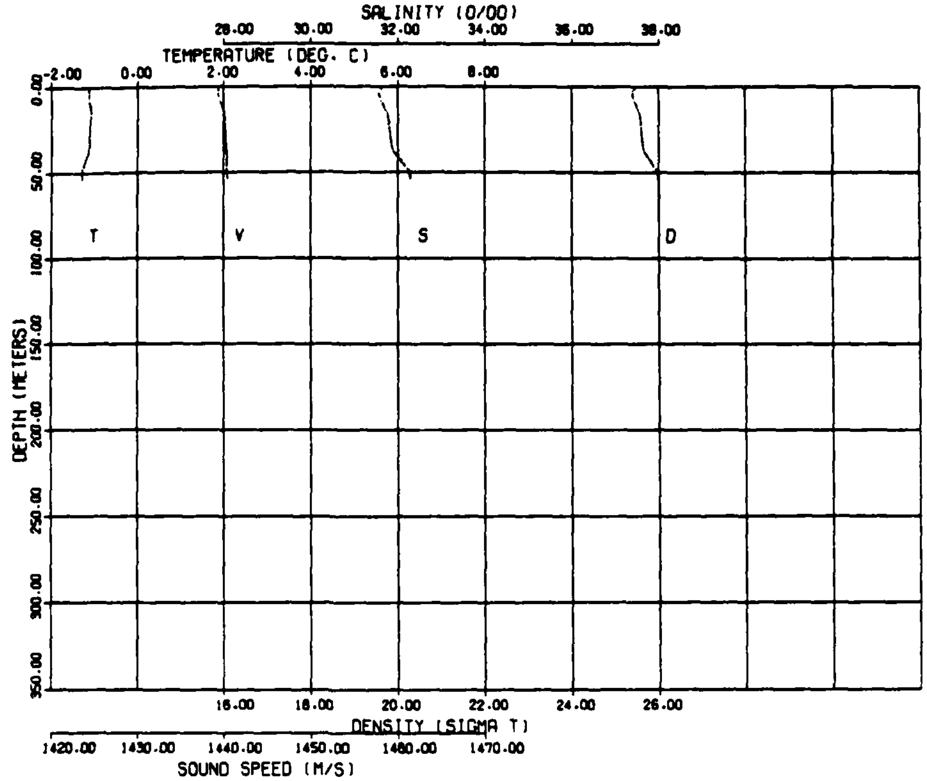
08/30/79 2019 STA 81 81-386N 9-288W BOTTOM 1188



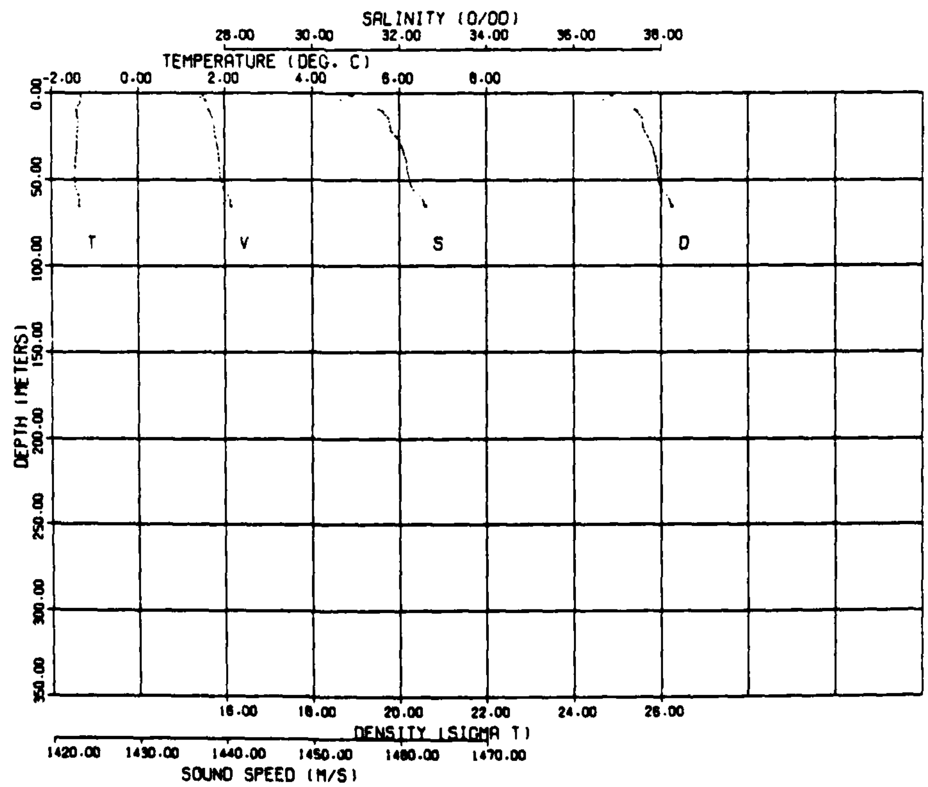
08/30/79 2335 STA 82 81-216N 9-151W BOTTOM 192



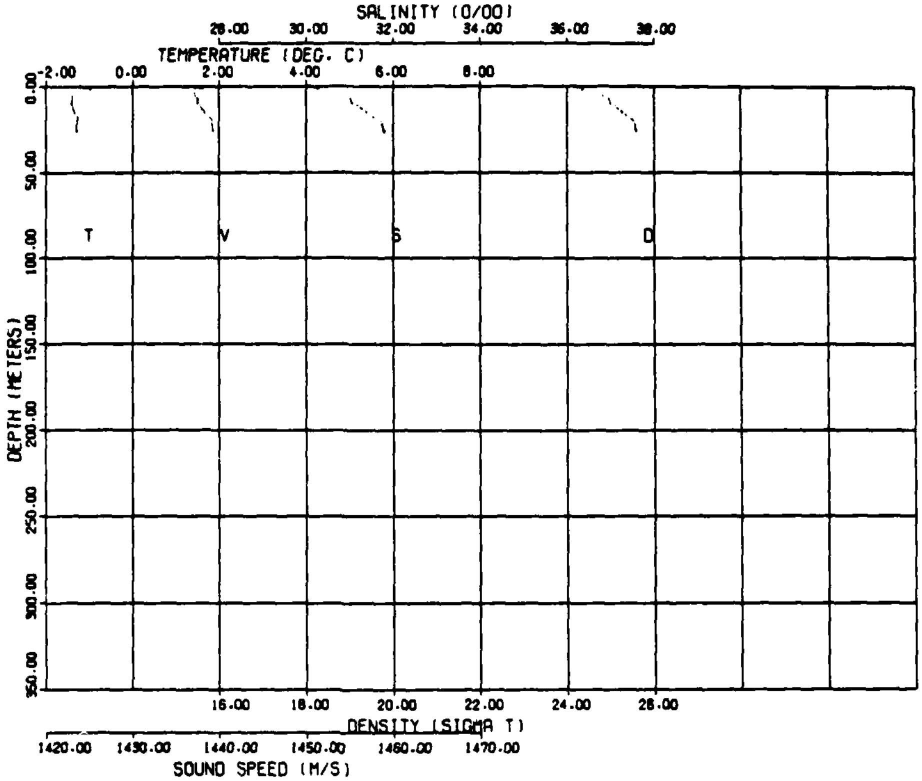
08/31/79 0405 STA 83 81-010N 10-090W BOTTOM 46



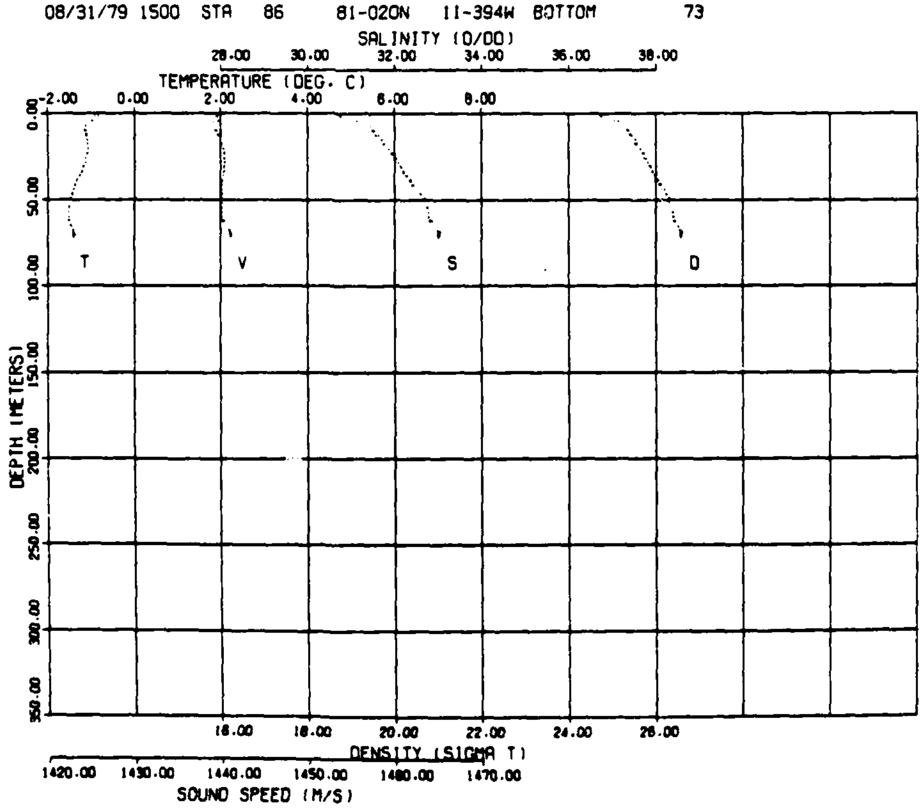
08/31/79 0830 STA 84 81-084N 10-503W BOTTOM 57

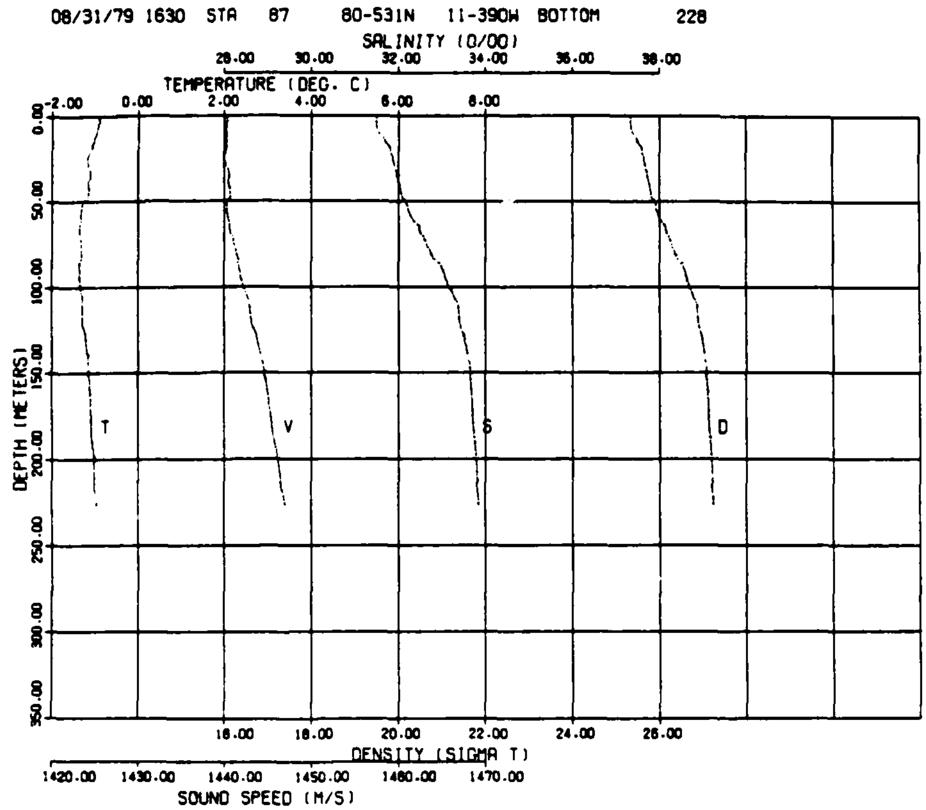


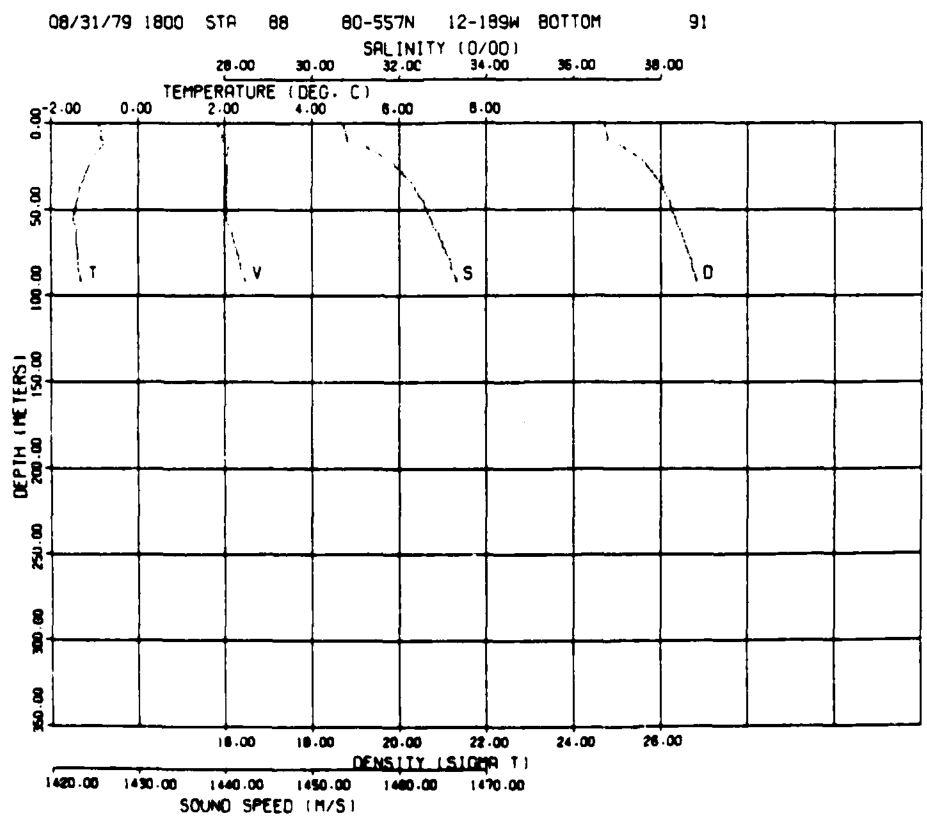
08/31/79 1130 STA 85 81-102N 12-191W BOTTOM 18

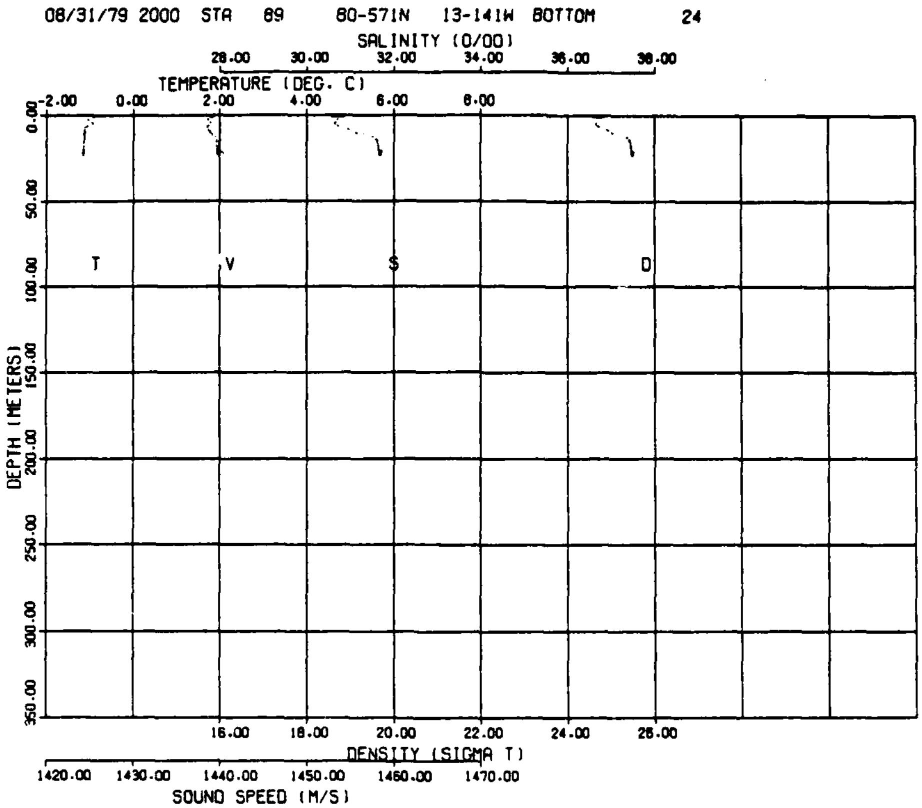


08/31/79 1500 STA 86 81-020N 11-394W BOTTOM 73

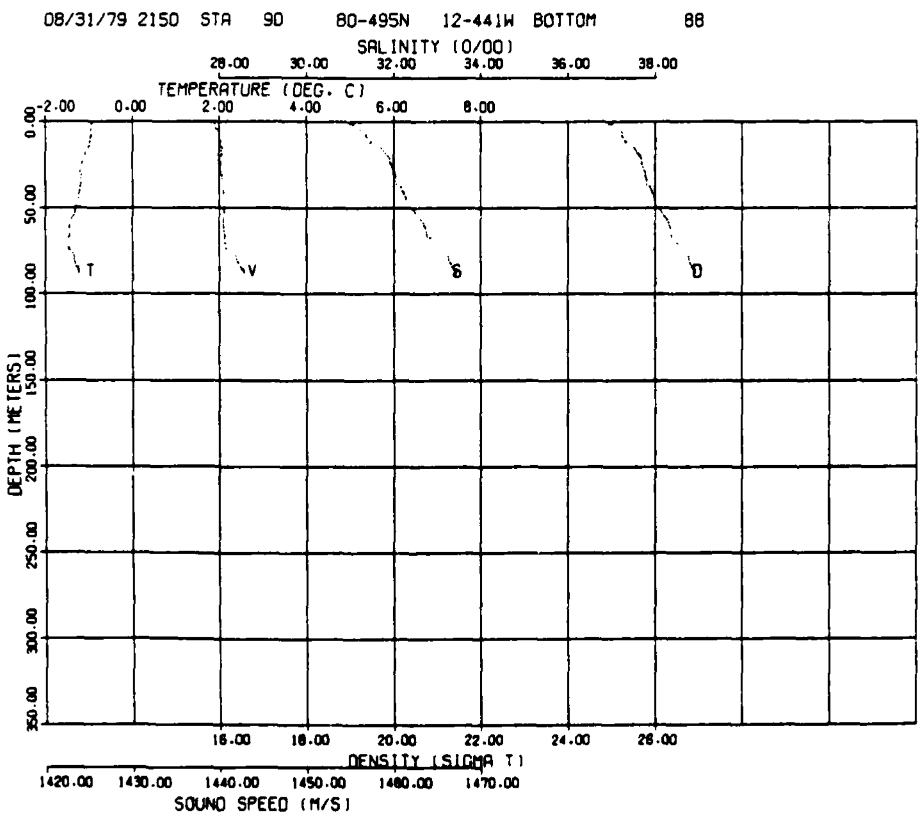



08/31/79 1630 STA 87 80-531N 11-390W BOTTOM 228
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

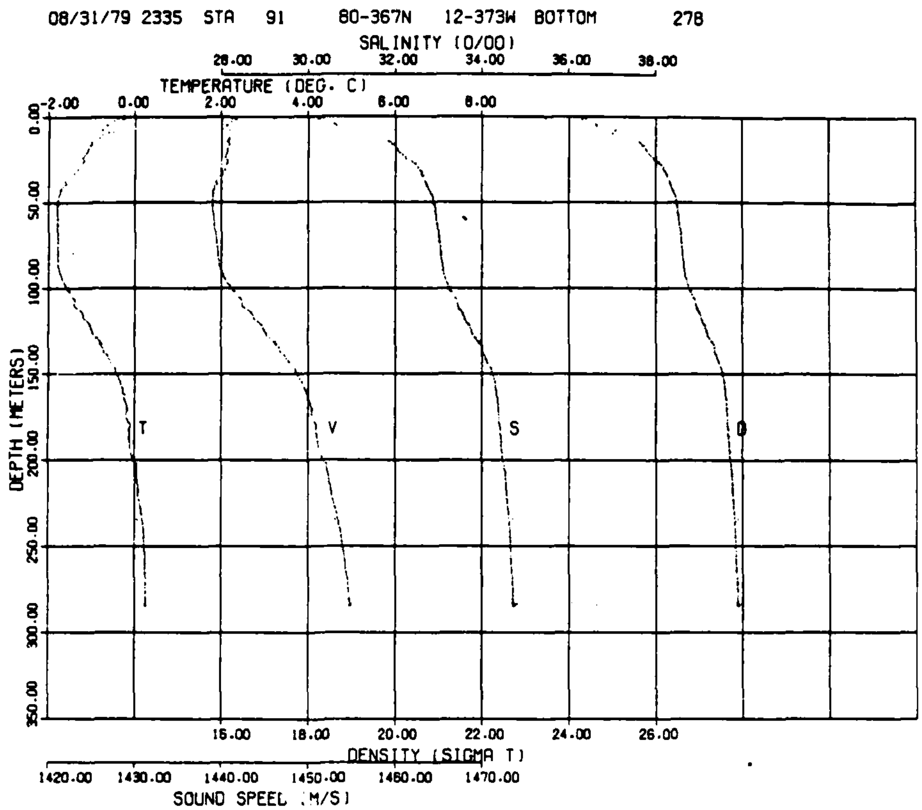

08/31/79 1800 STA 88 80-557N 12-189W BOTTOM 91
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



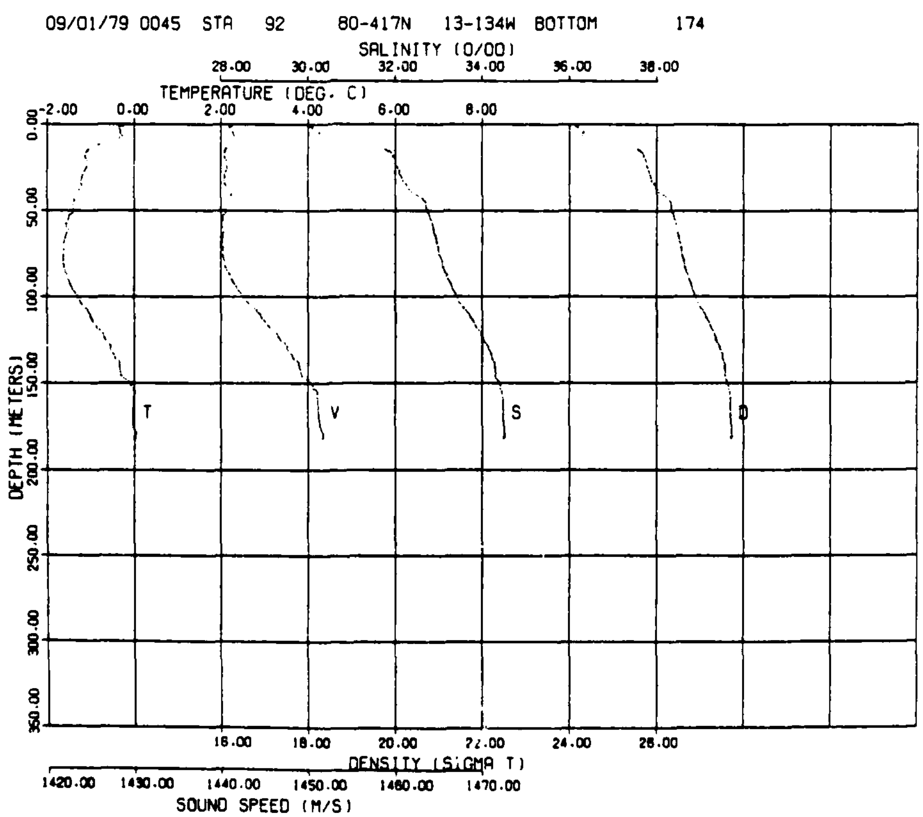
08/31/79 2000 STA 89 80-571N 13-141W BOTTOM 24
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



08/31/79 2150 STA 90 80-495N 12-441W BOTTOM 88
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

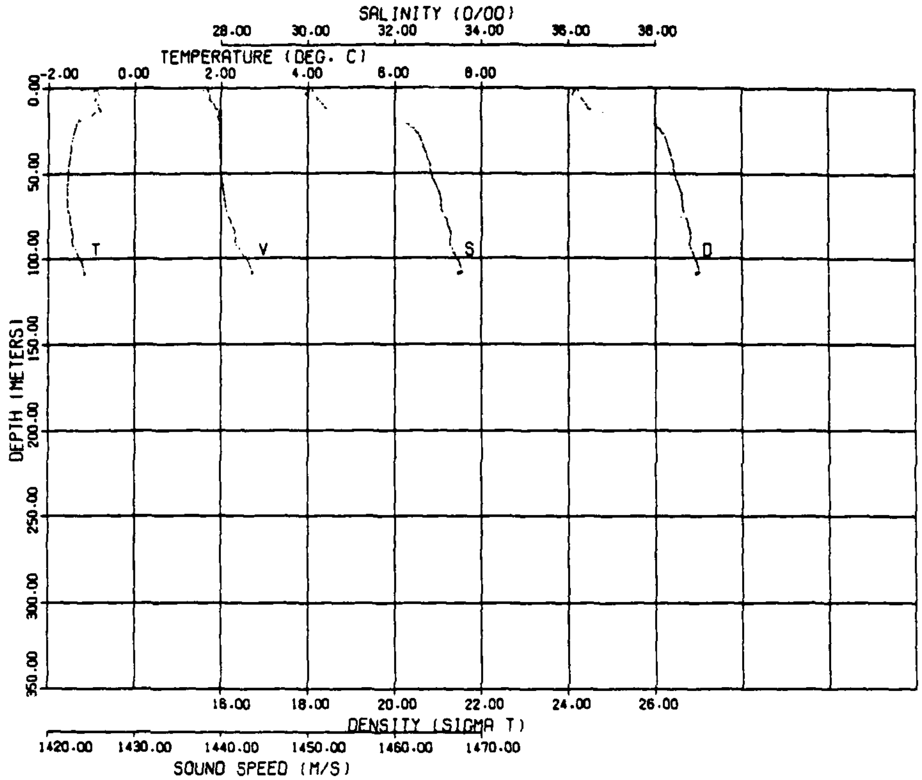


08/31/79 2335 STA 91 80-367N 12-373W BOTTOM 278
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

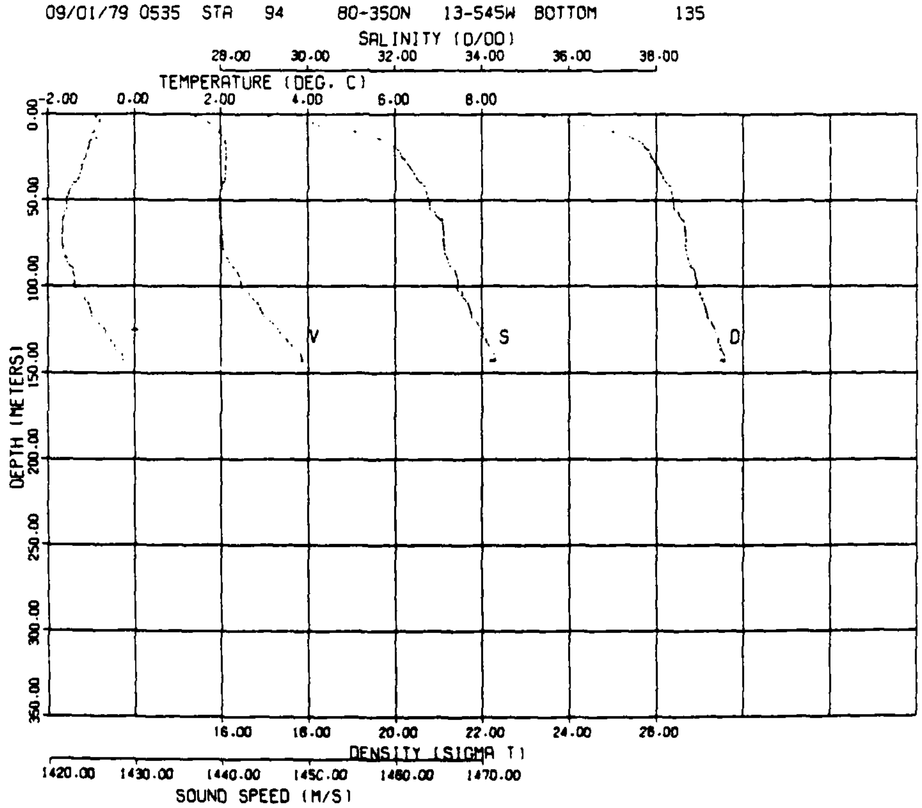


09/01/79 0045 STA 92 80-417N 13-134W BOTTOM 174
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

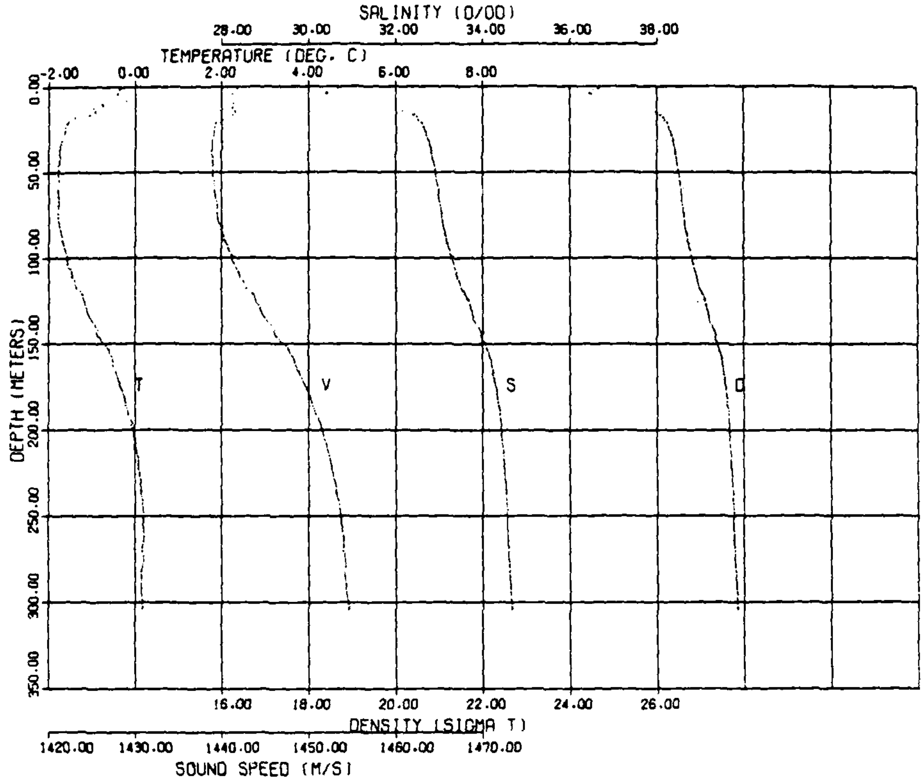
09/01/79 0250 STA 93 80-446N 14-175W BOTTOM 110



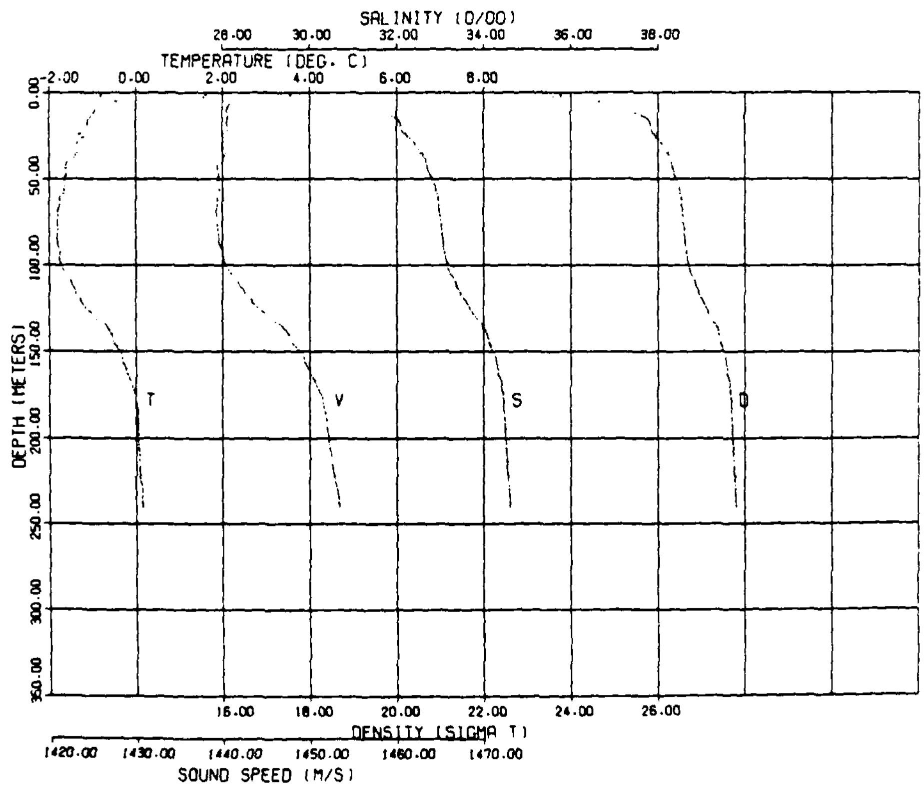
09/01/79 0535 STA 94 80-350N 13-545W BOTTOM 135



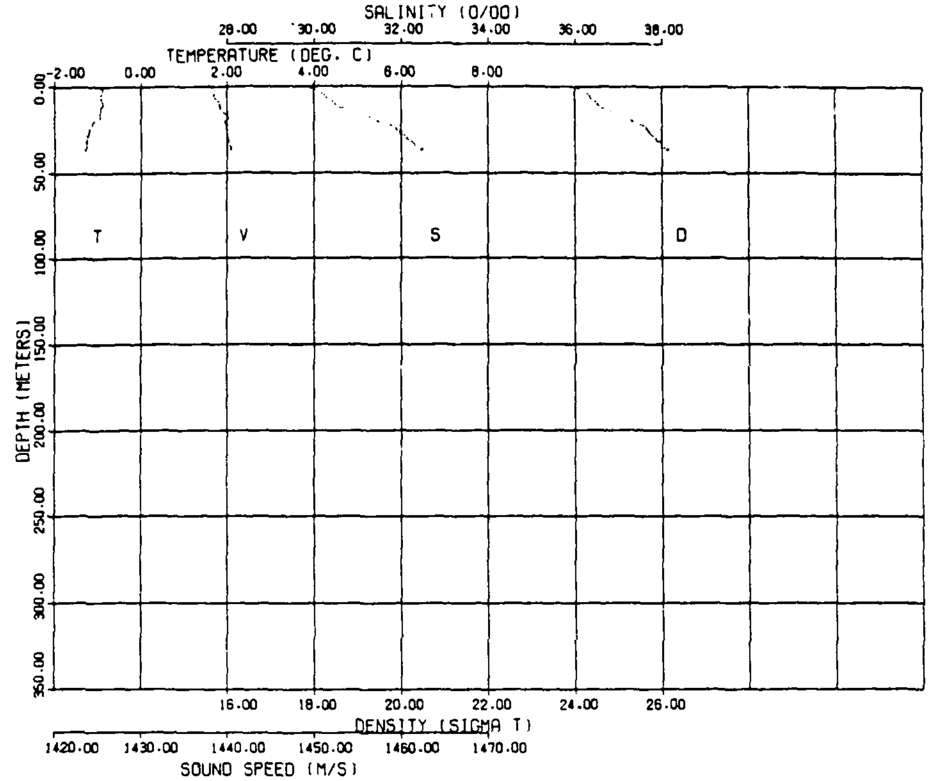
09/01/79 0705 STA 95 80-271N 13-213W BOTTOM 293



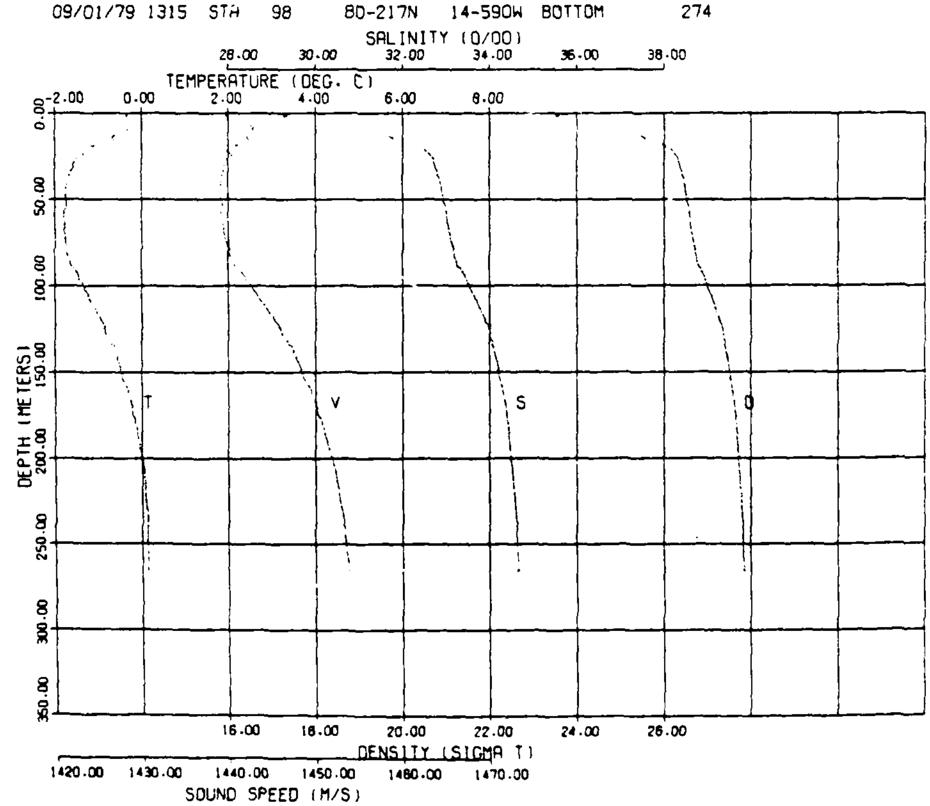
09/01/79 0830 STA 96 80-320N 14-193W BOTTOM 238



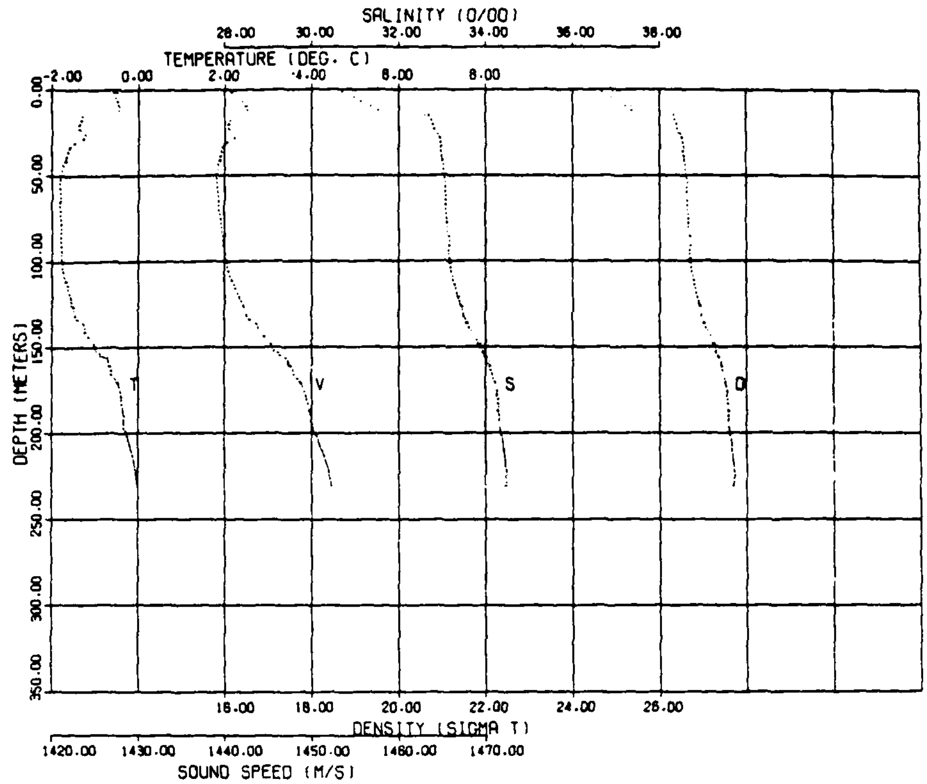
09/01/79 1007 STA 97 80-360N 15-215W BOTTOM 24



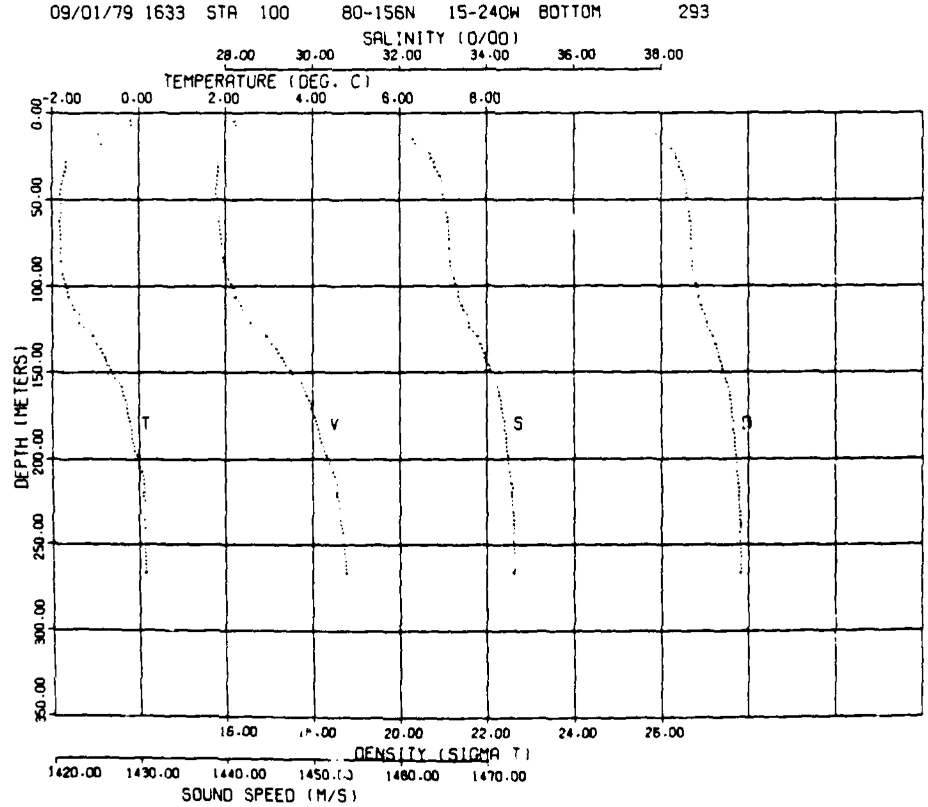
09/01/79 1315 STA 98 80-217N 14-590W BOTTOM 274



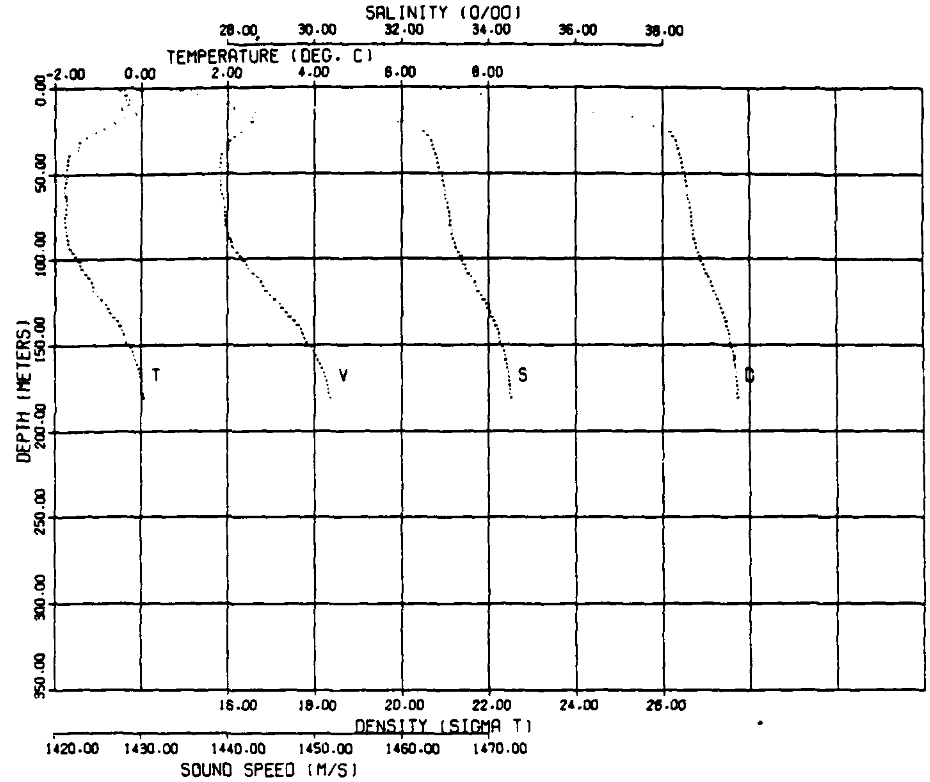
09/01/79 1447 STA 99 80-103N 14-196W BOTTOM 238



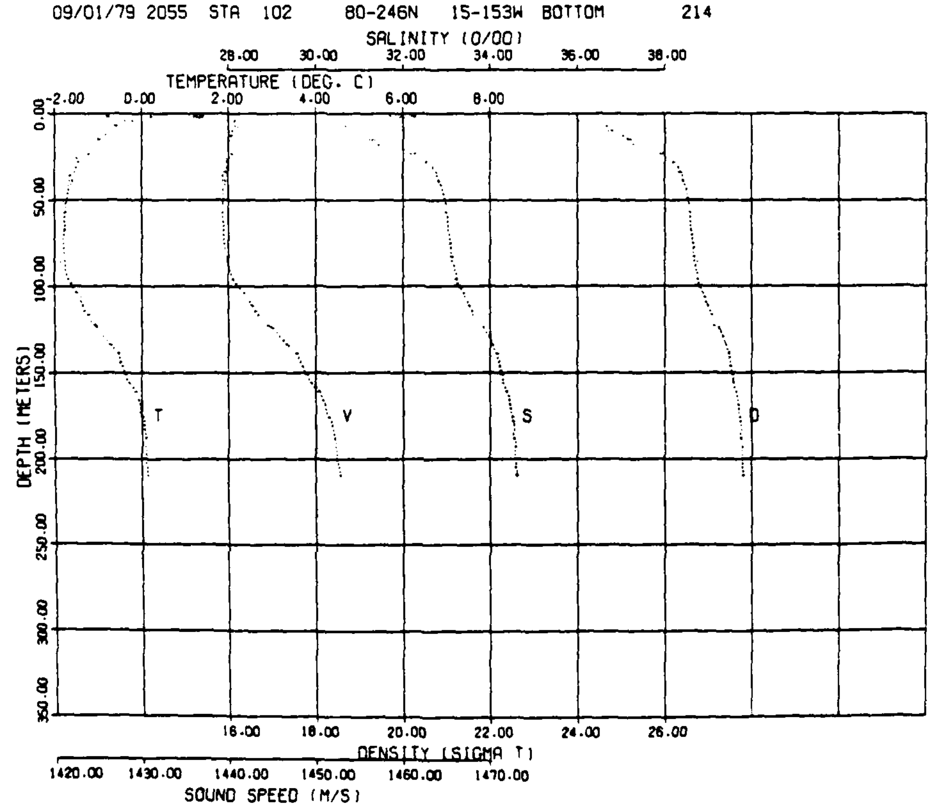
09/01/79 1633 STA 100 80-156N 15-240W BOTTOM 293

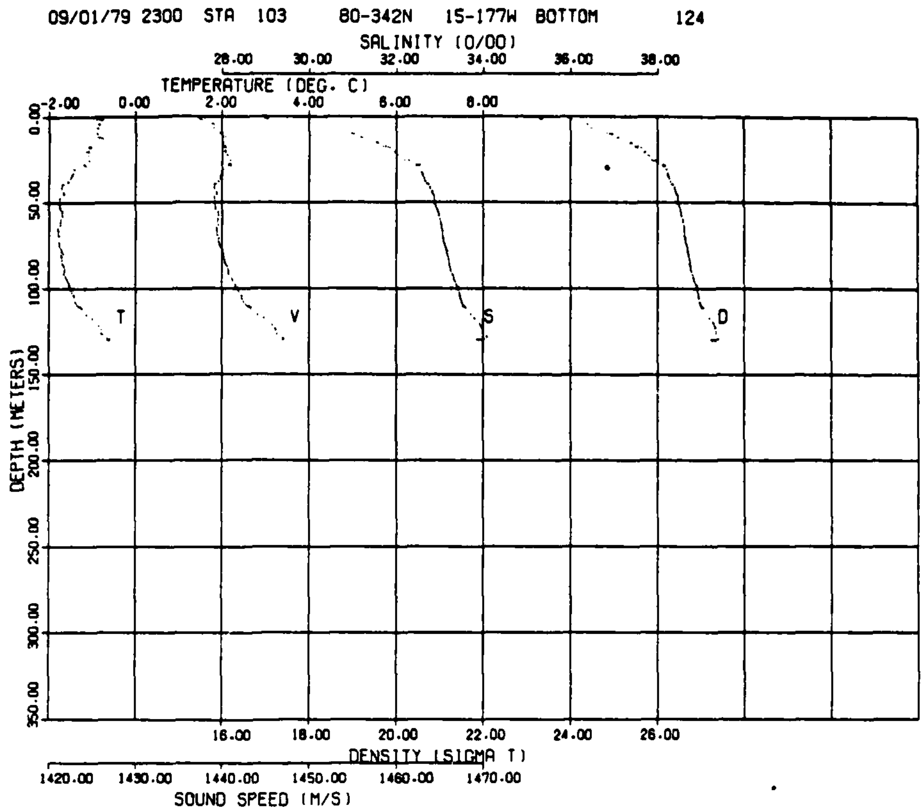


09/01/79 1835 STA 101 80-169N 15-511W BOTTOM 183

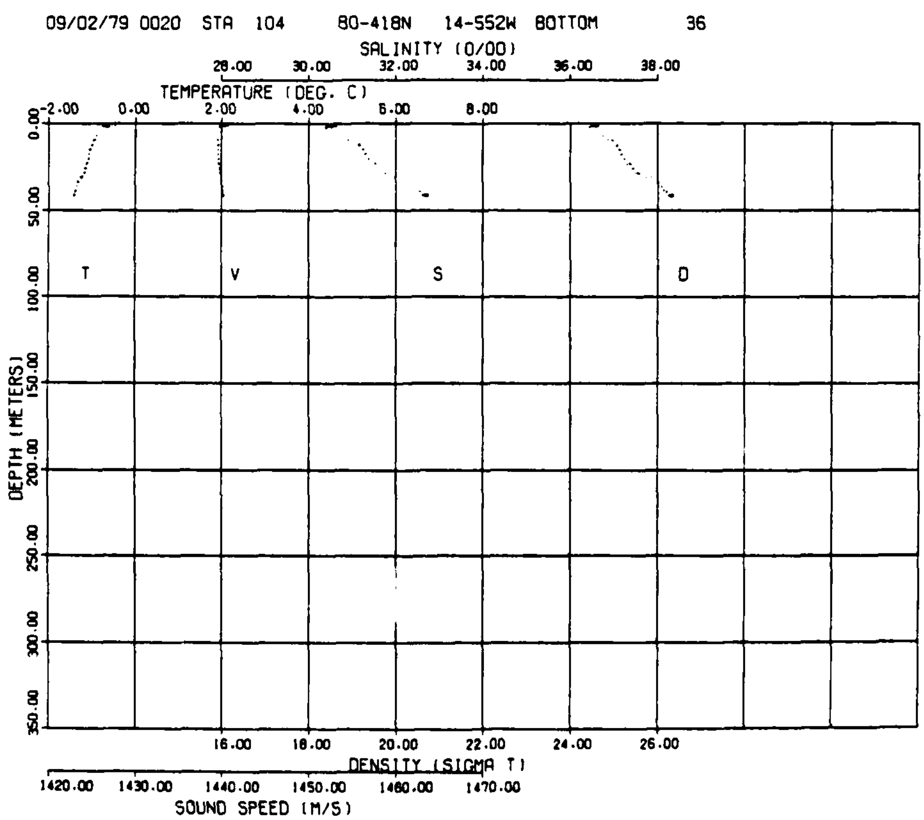


09/01/79 2055 STA 102 80-246N 15-153W BOTTOM 214

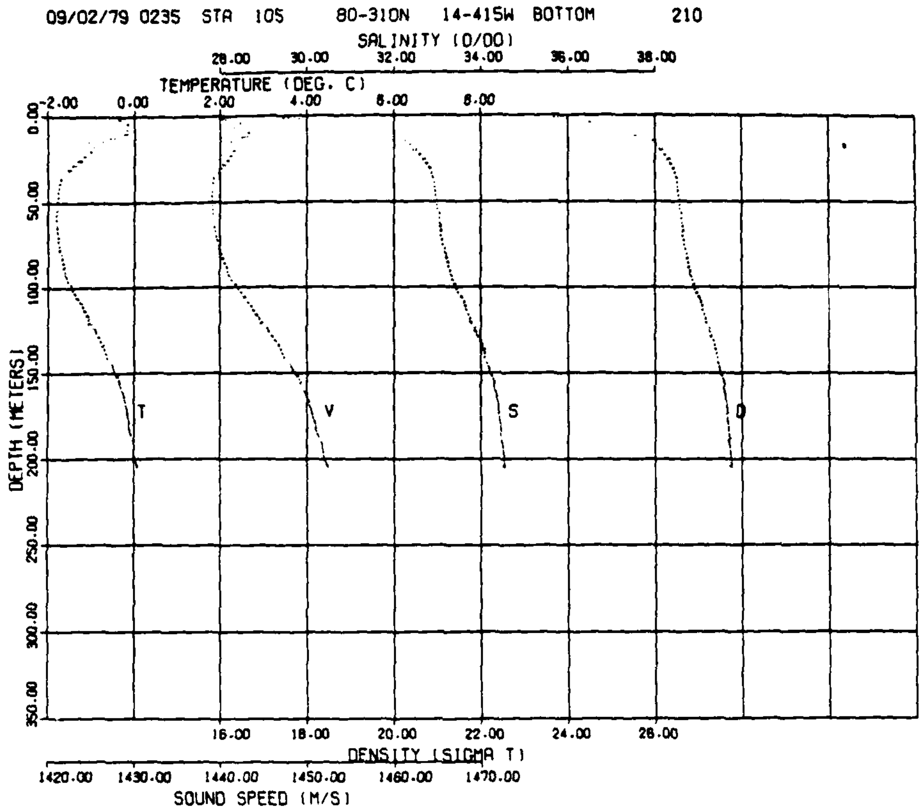


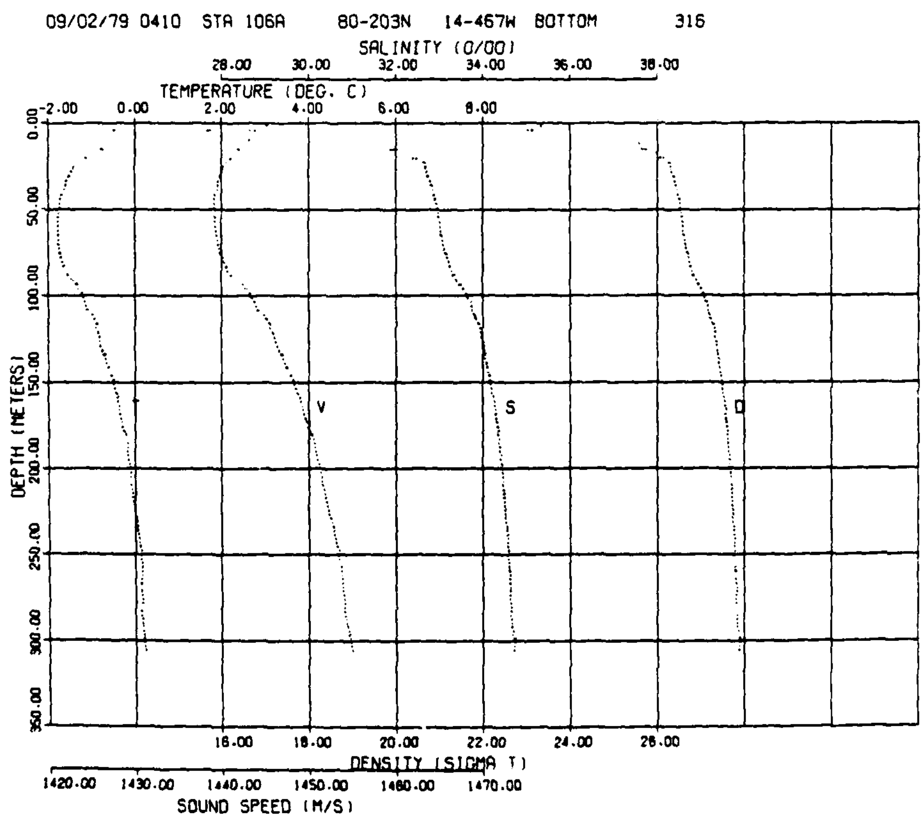


09/01/79 2300 STA 103 80-342N 15-177W BOTTOM 124
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

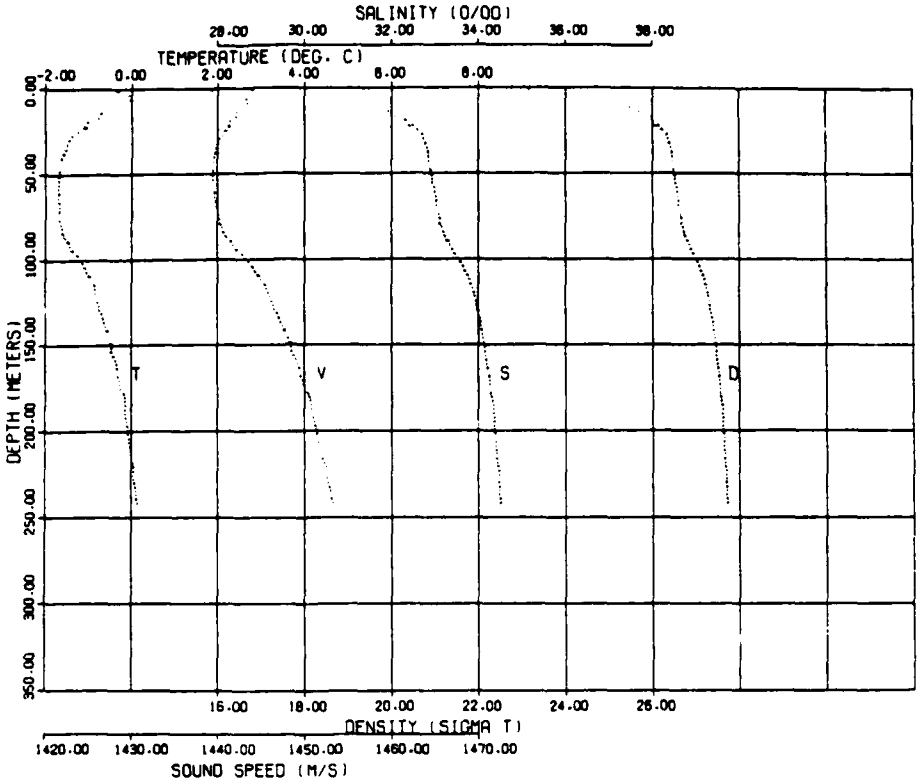


09/02/79 0020 STA 104 80-418N 14-552W BOTTOM 36
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

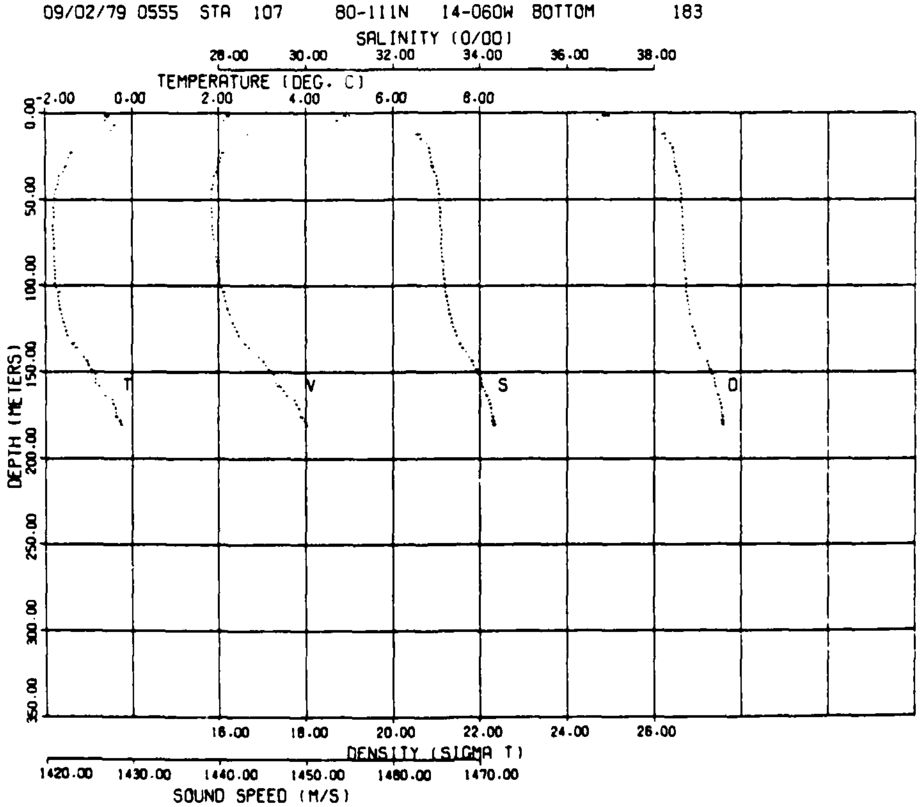

09/02/79 0235 STA 105 80-310N 14-415W BOTTOM 210
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

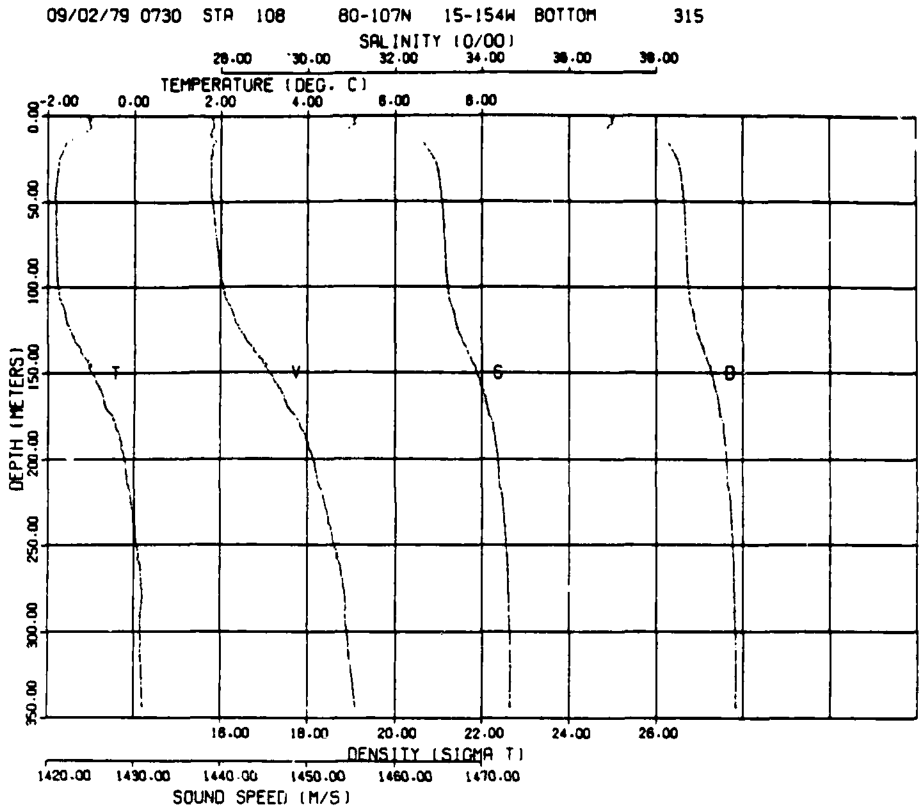

09/02/79 0410 STA 106A 80-203N 14-467W BOTTOM 316
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

09/02/79 0410 STA 1068 80-203N 14-467W BOTTOM 316

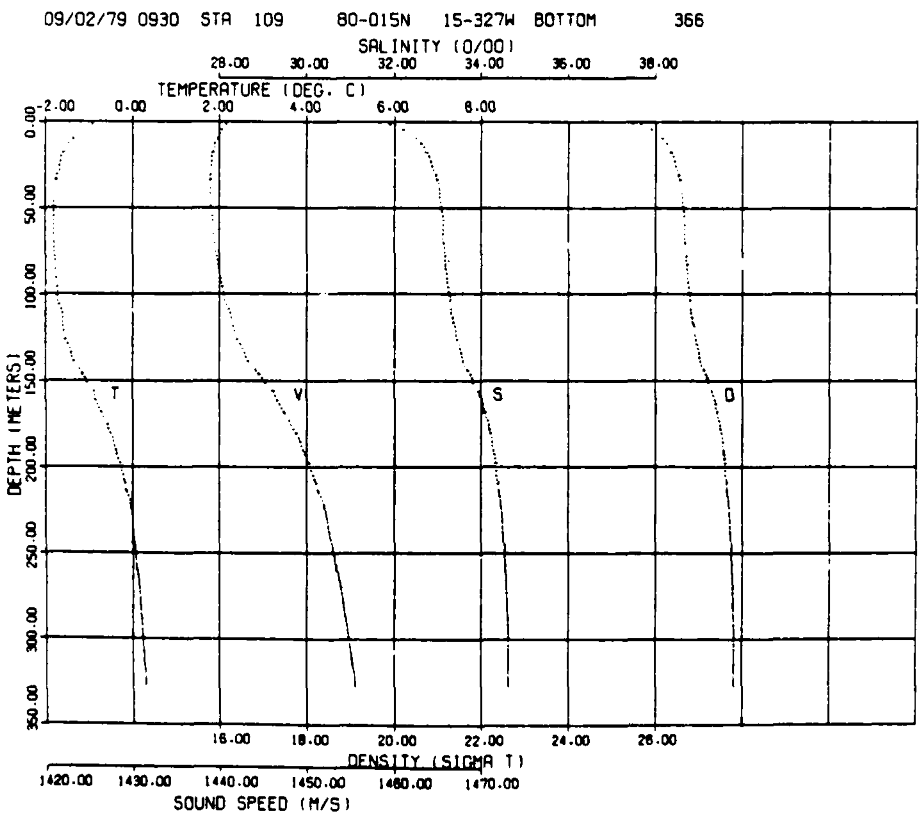


09/02/79 0555 STA 107 80-111N 14-060W BOTTOM 183



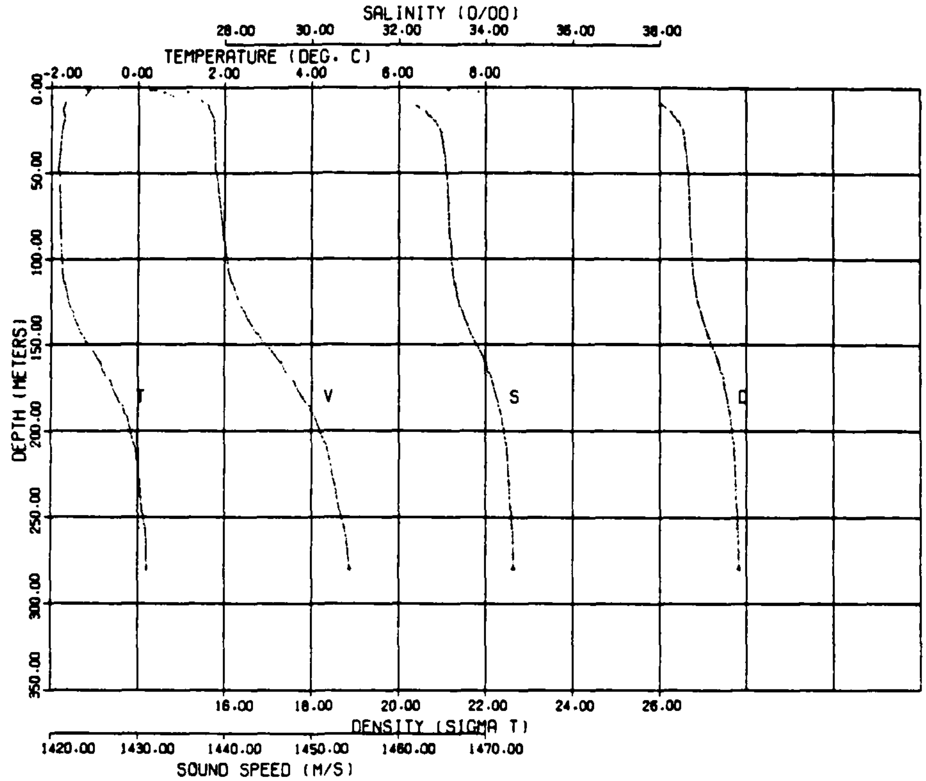


09/02/79 0730 STA 108 80-107N 15-154W BOTTOM 315
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

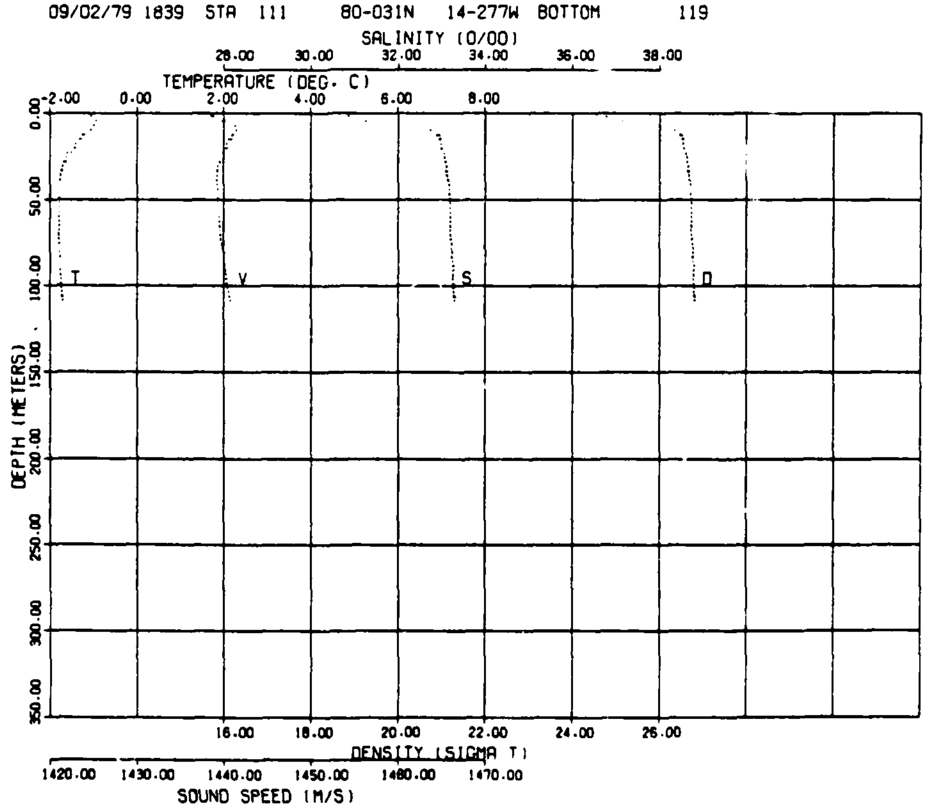


09/02/79 0930 STA 109 80-015N 15-327W BOTTOM 366
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

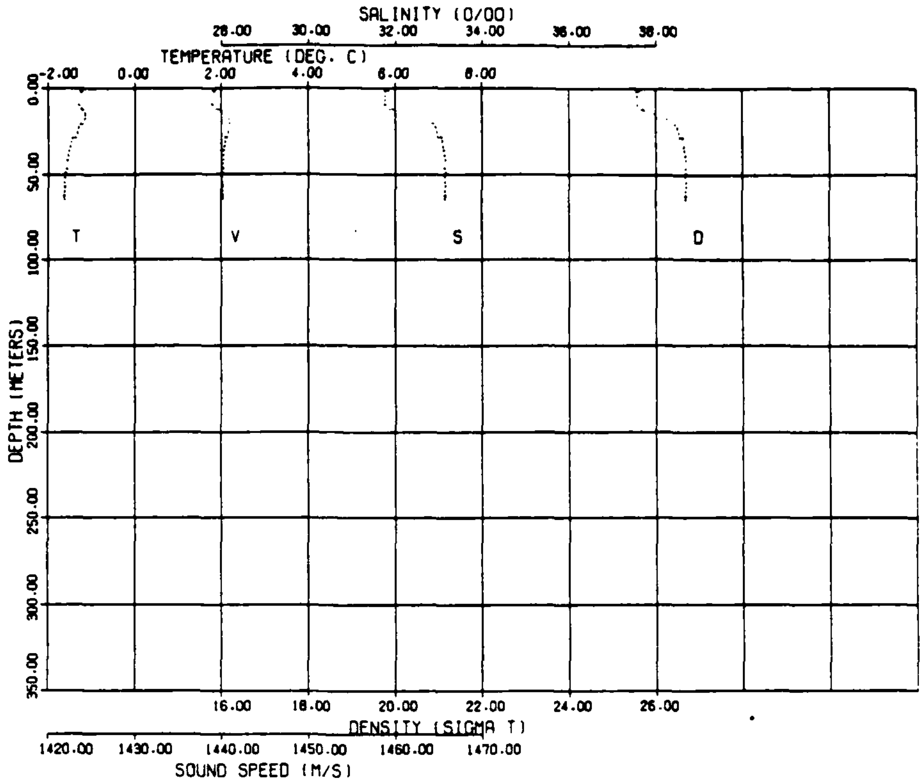
09/02/79 1045 STA 110 79-544N 15-308W BOTTOM 274



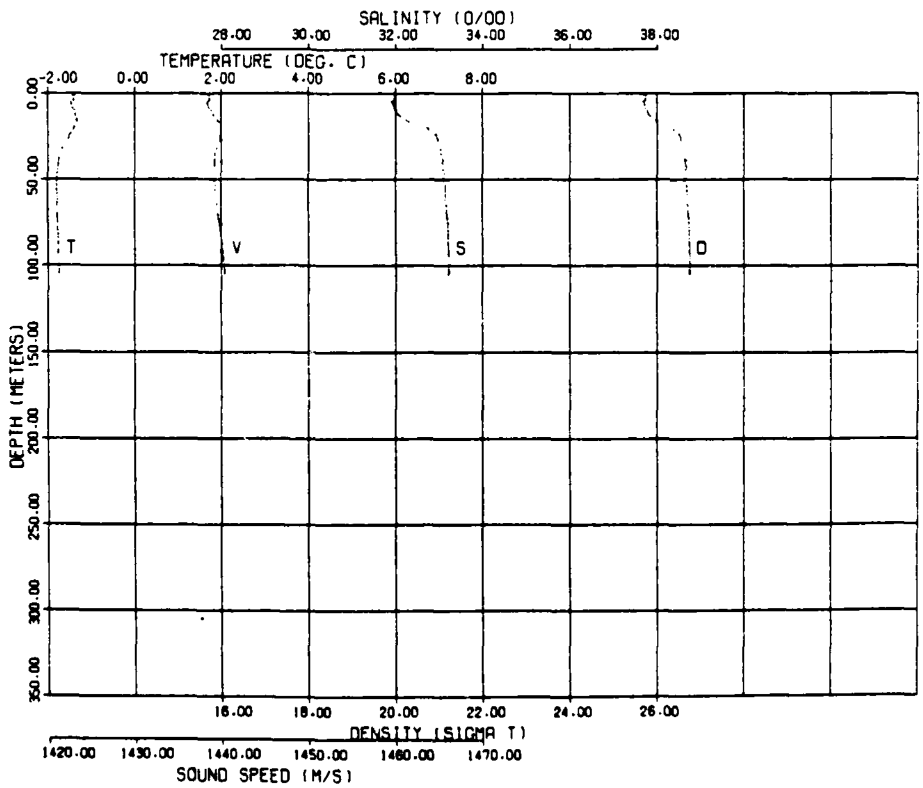
09/02/79 1839 STA 111 80-031N 14-277W BOTTOM 119



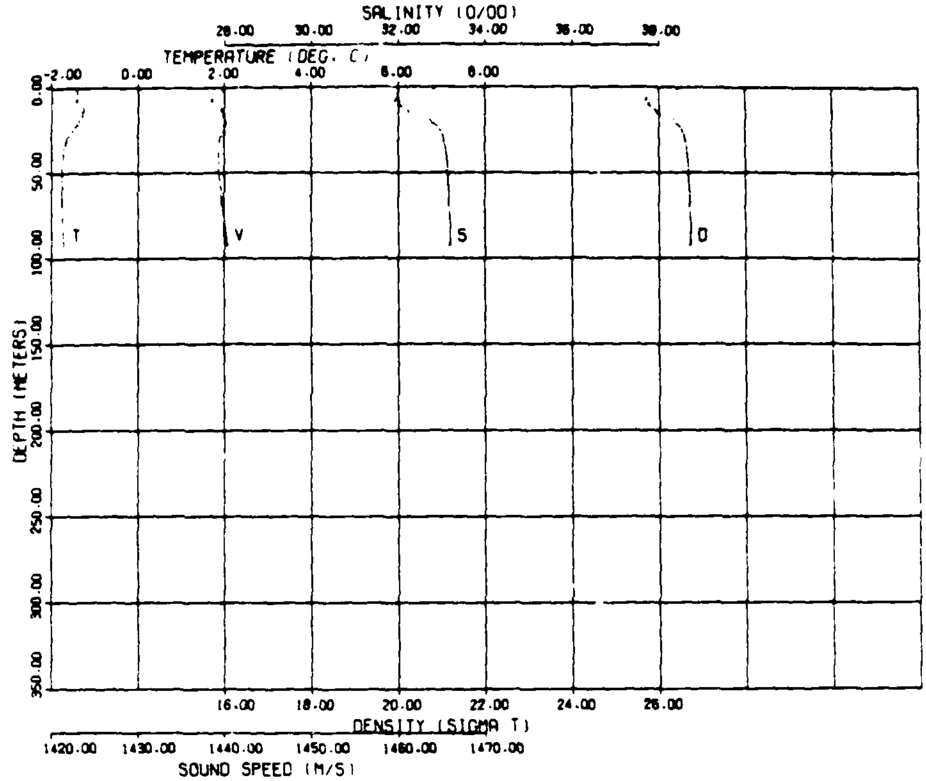
09/02/79 2110 STA 112 79-520N 14-178W BOTTOM 58

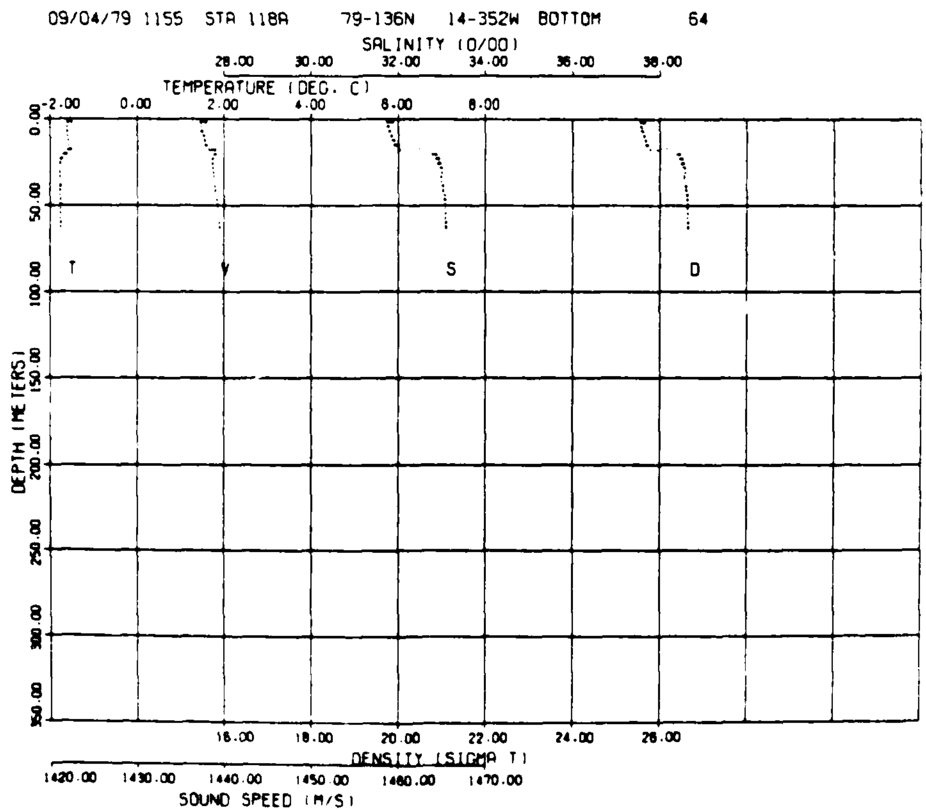


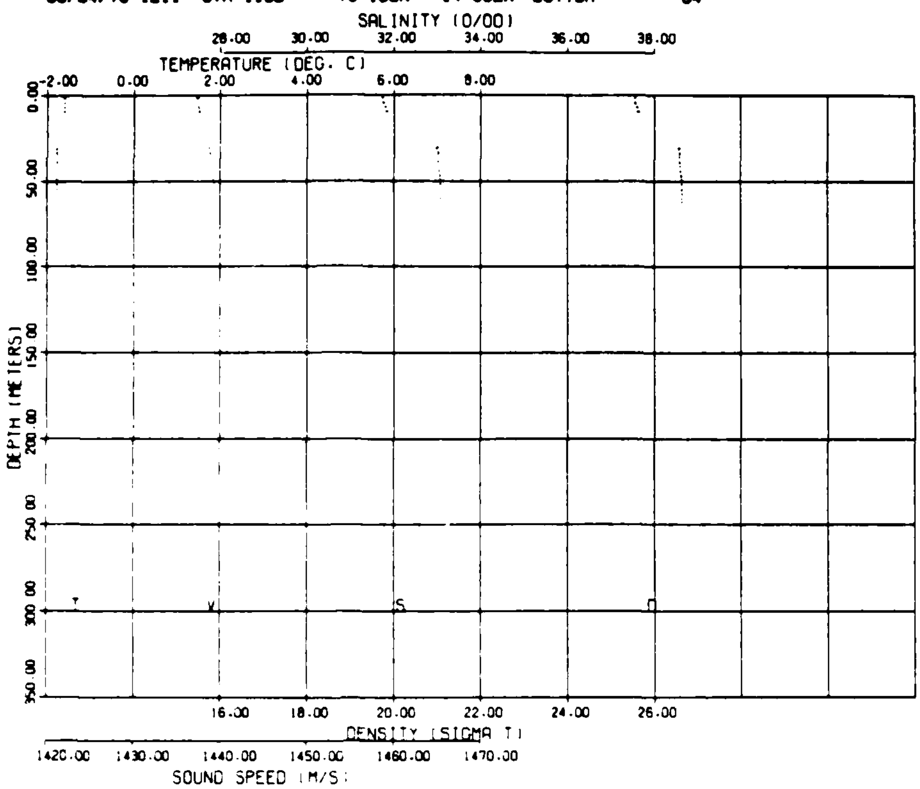
09/03/79 0000 STA 113A 79-407N 14-165W BOTTOM 100



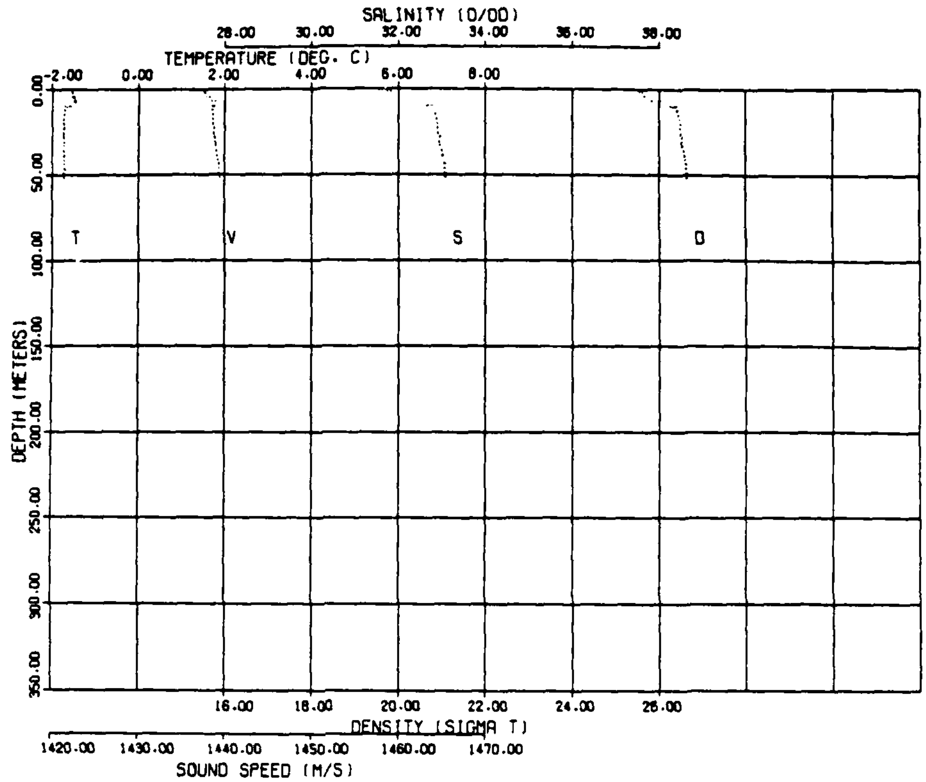
09/03/79 0020 STA 113B 79-407N 14-165W BOTTOM 100



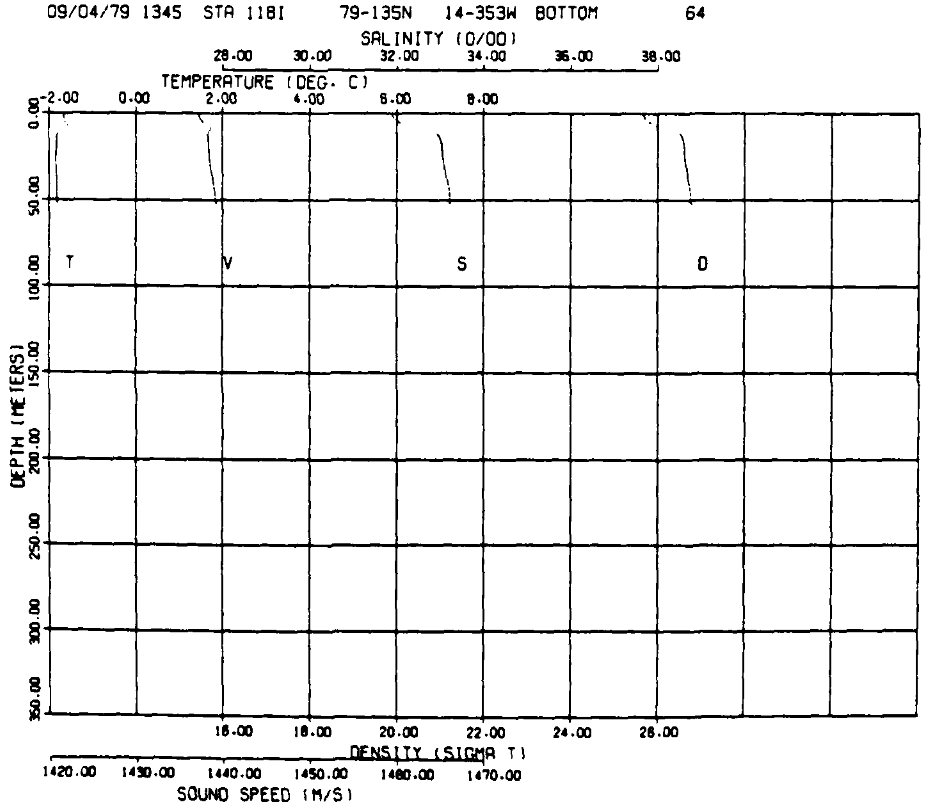

09/04/79 1155 STA 118A 79-136N 14-352W BOTTOM 64
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

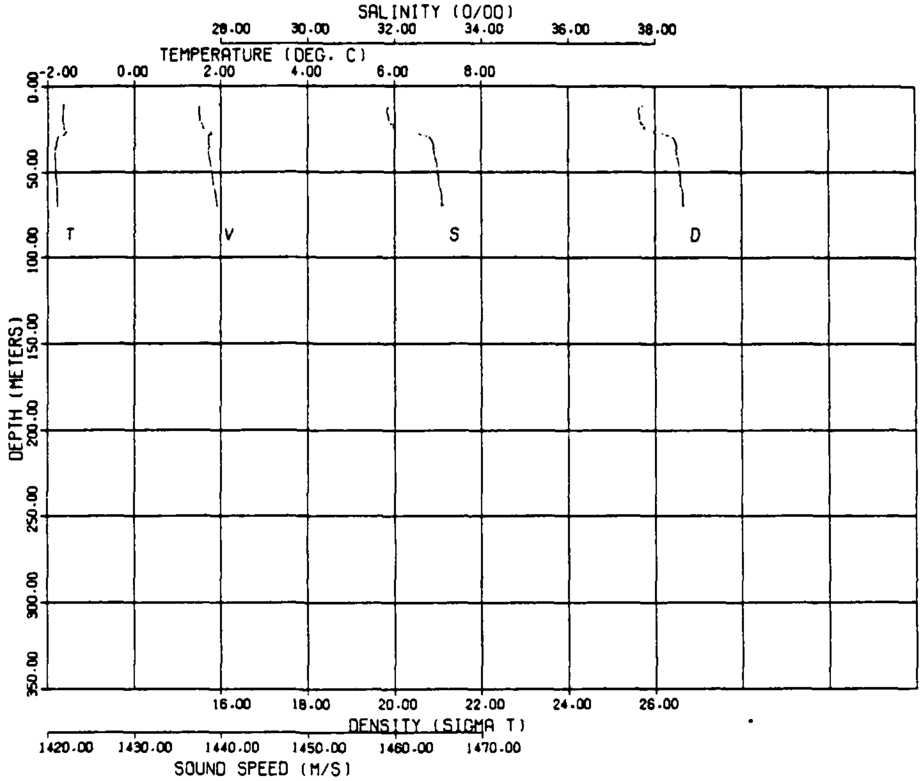
09/04/79 1301 STA 118H 79-135N 14-353W BOTTOM 64



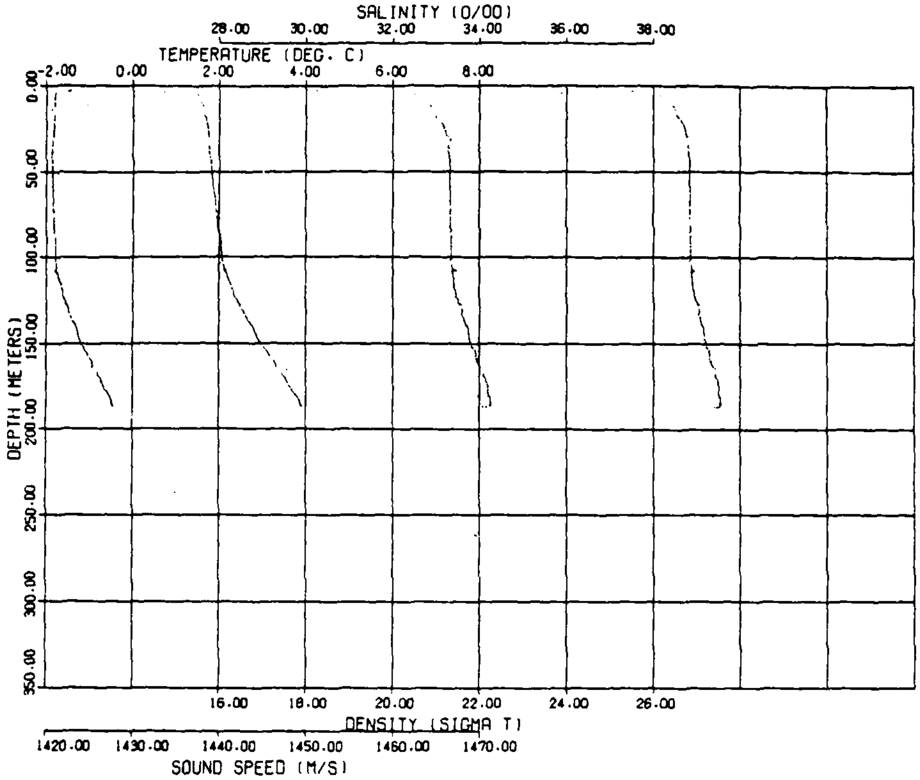
09/04/79 1345 STA 118I 79-135N 14-353W BOTTOM 64



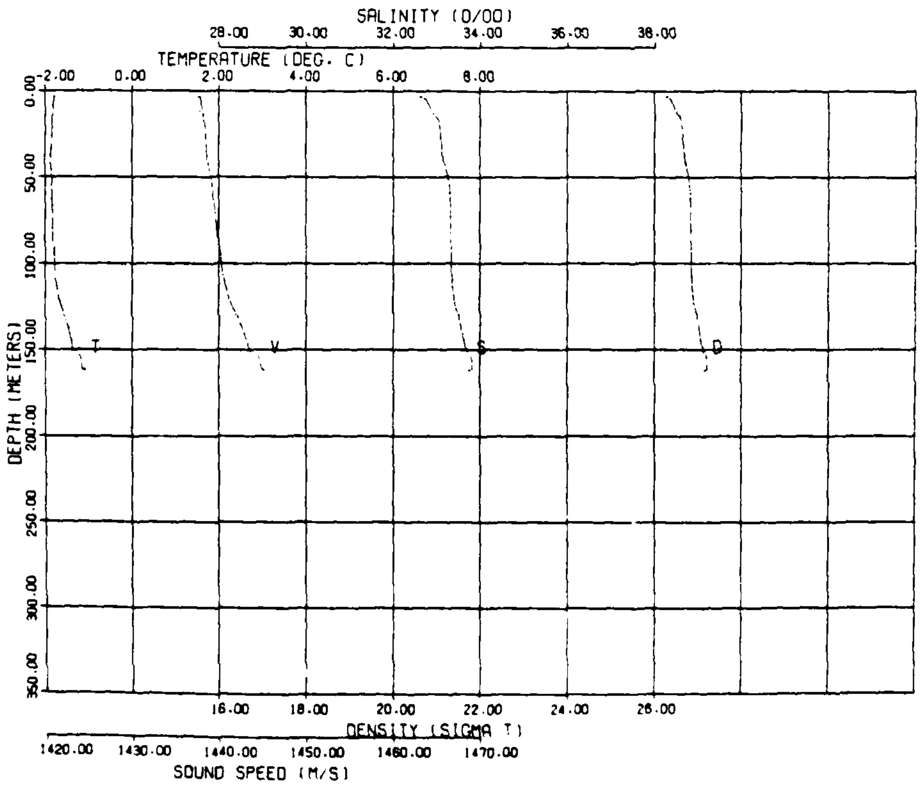
09/04/79 1506 STA 118J 79-136N 14-352W BOTTOM 64



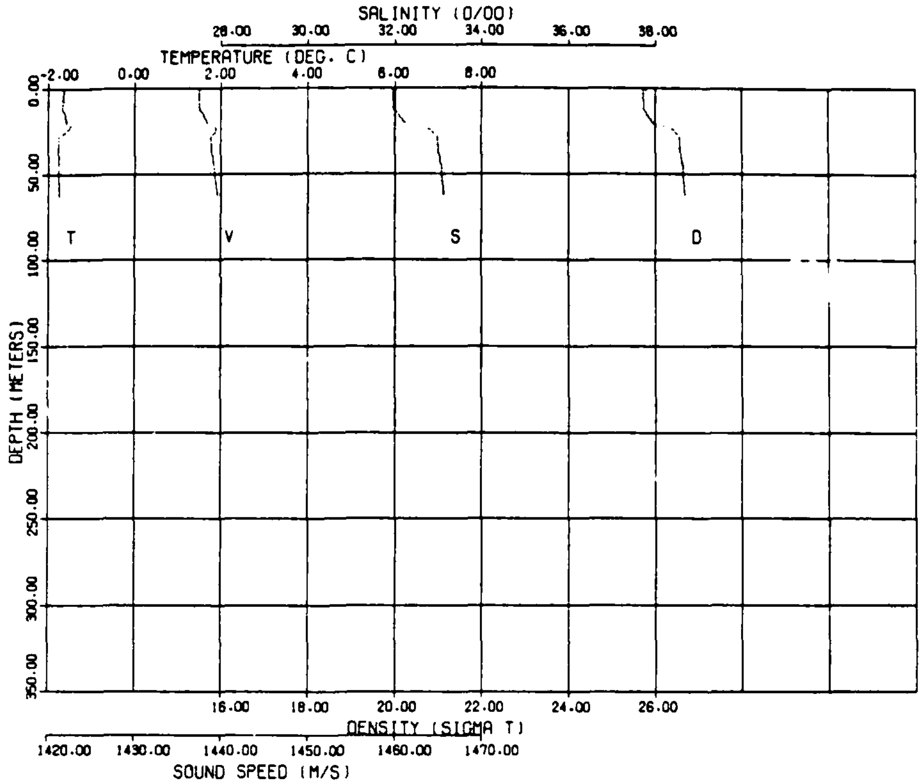
09/05/79 1000 STA 119 79-442N 16-225W BOTTOM



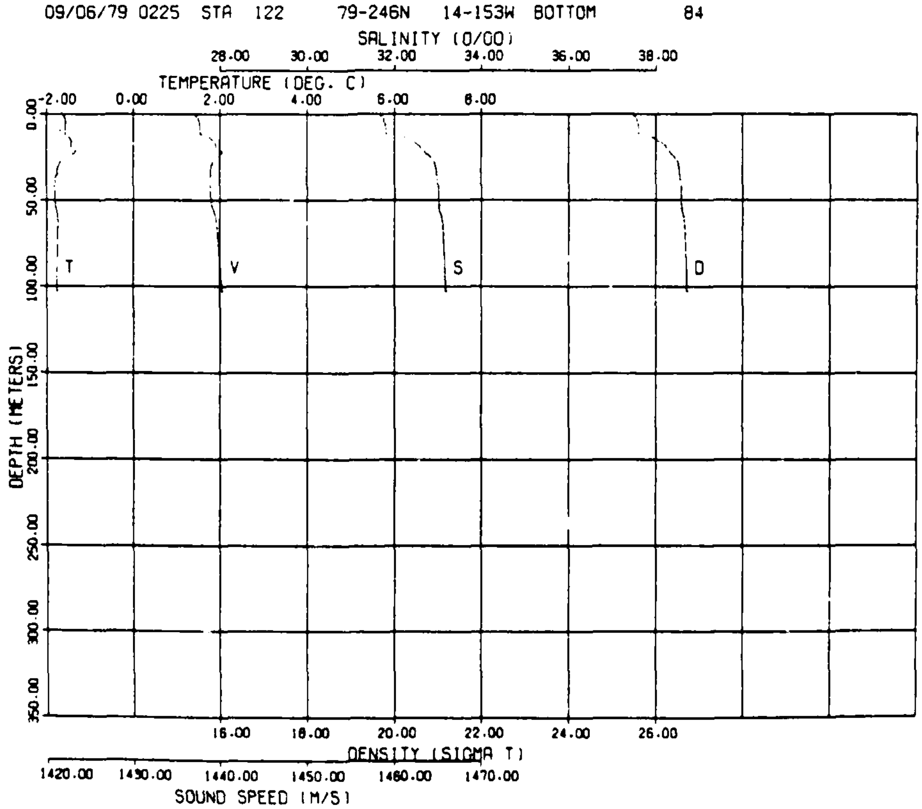
09/05/79 1030 STA 120 79-386N 16-045W BOTTOM



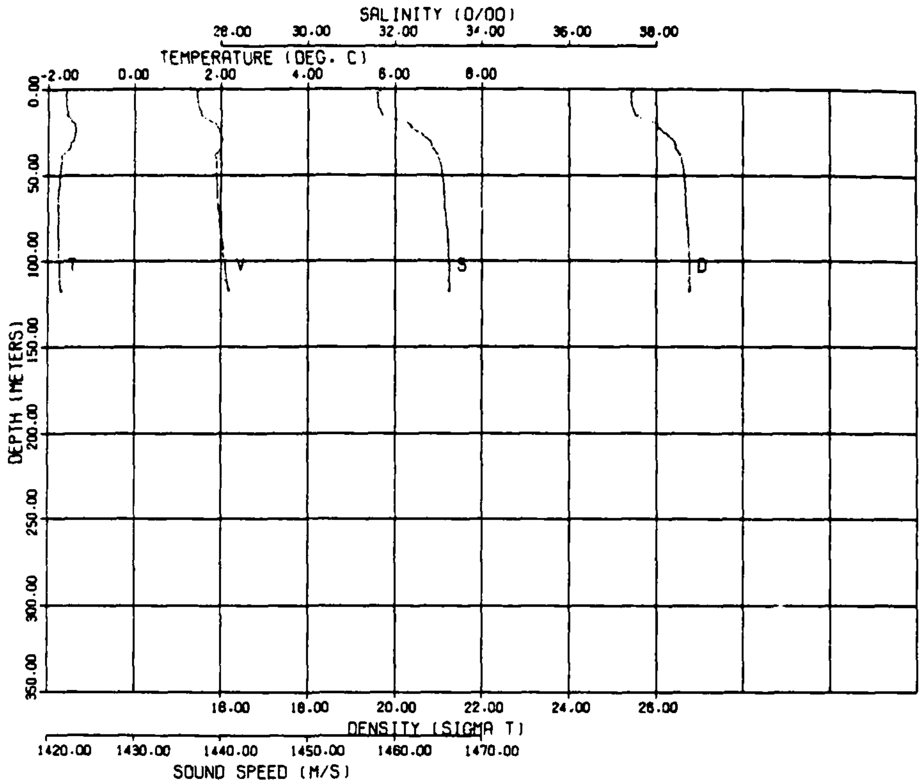
09/05/79 2225 STA 121 79-163N 14-235W BOTTOM 73



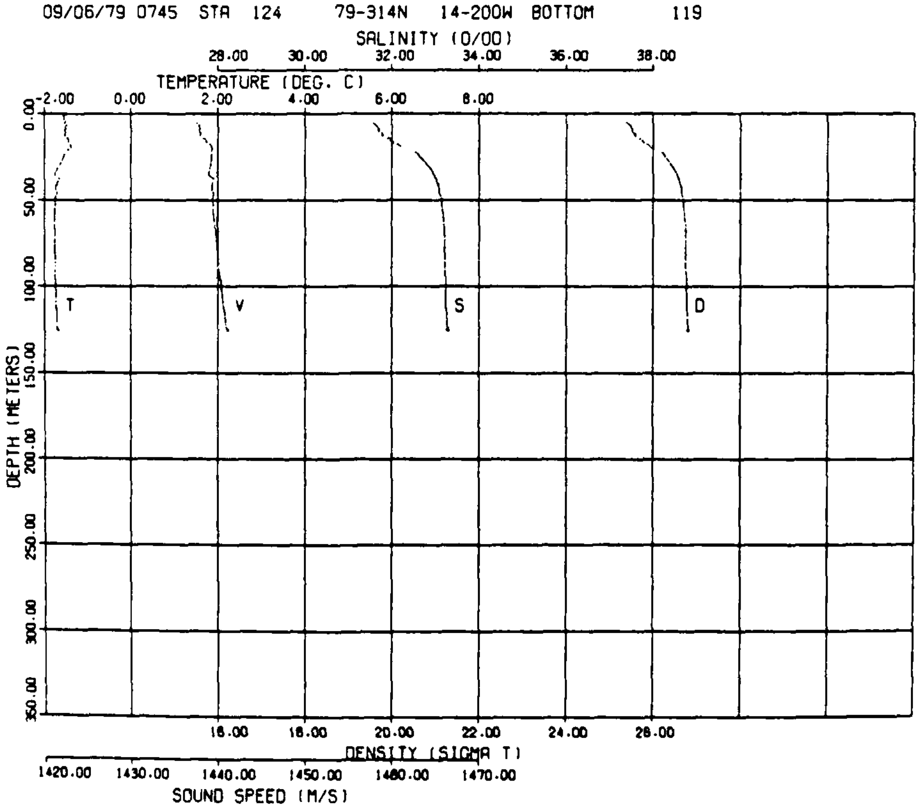
09/06/79 0225 STA 122 79-246N 14-153W BOTTOM 84

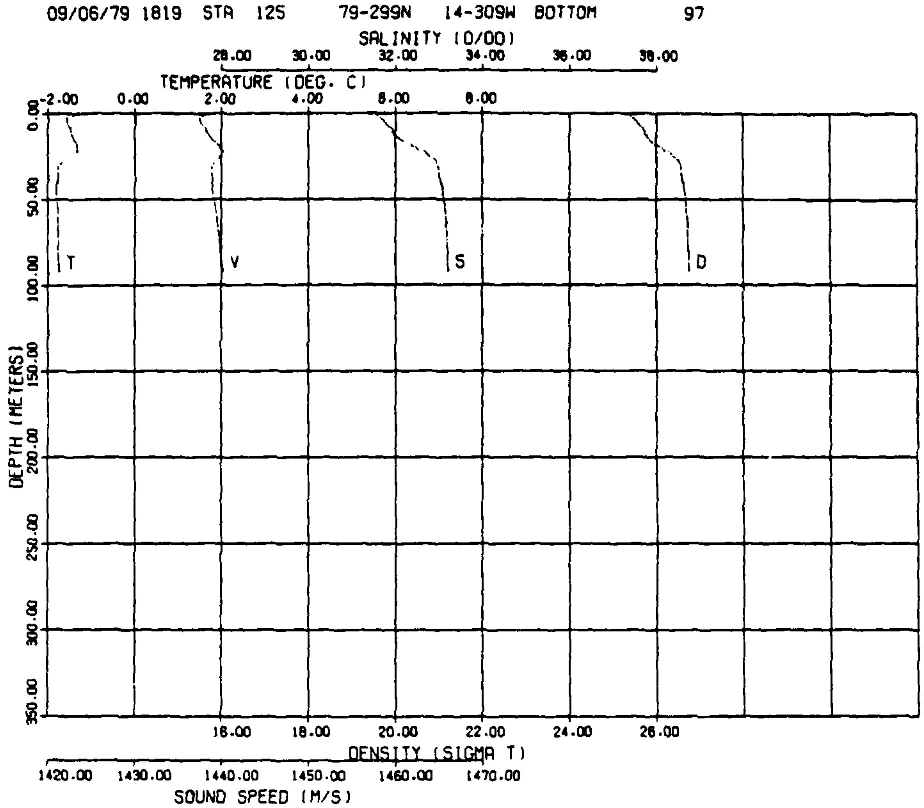


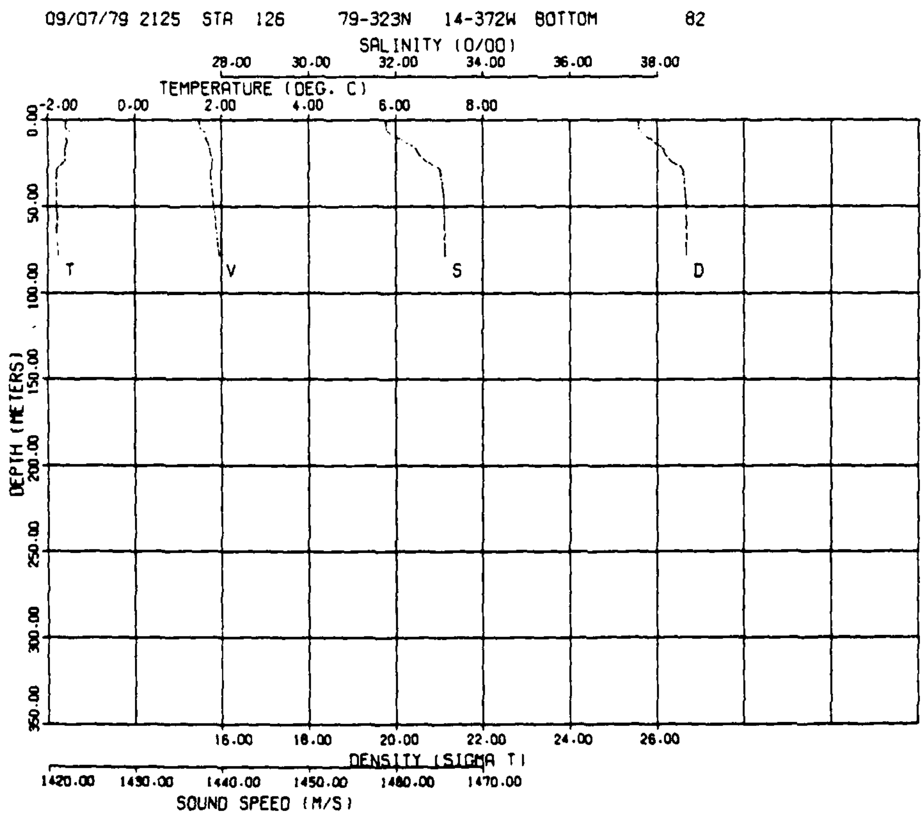
09/06/79 0530 STA 123 79-299N 14-163W BOTTOM 110



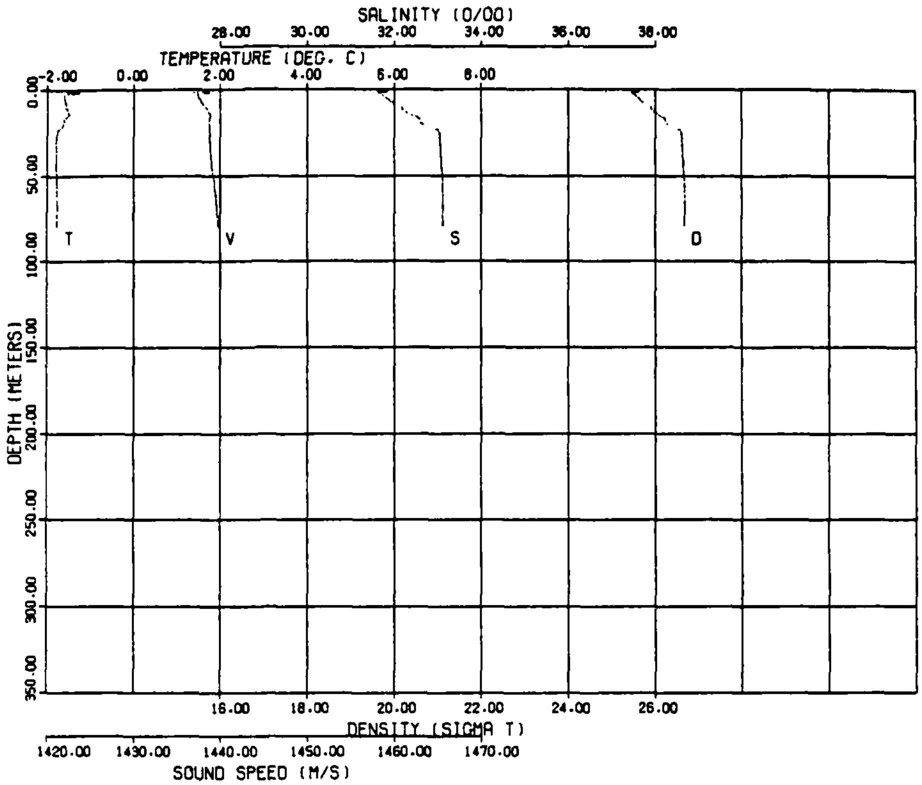
09/06/79 0745 STA 124 79-314N 14-200W BOTTOM 119



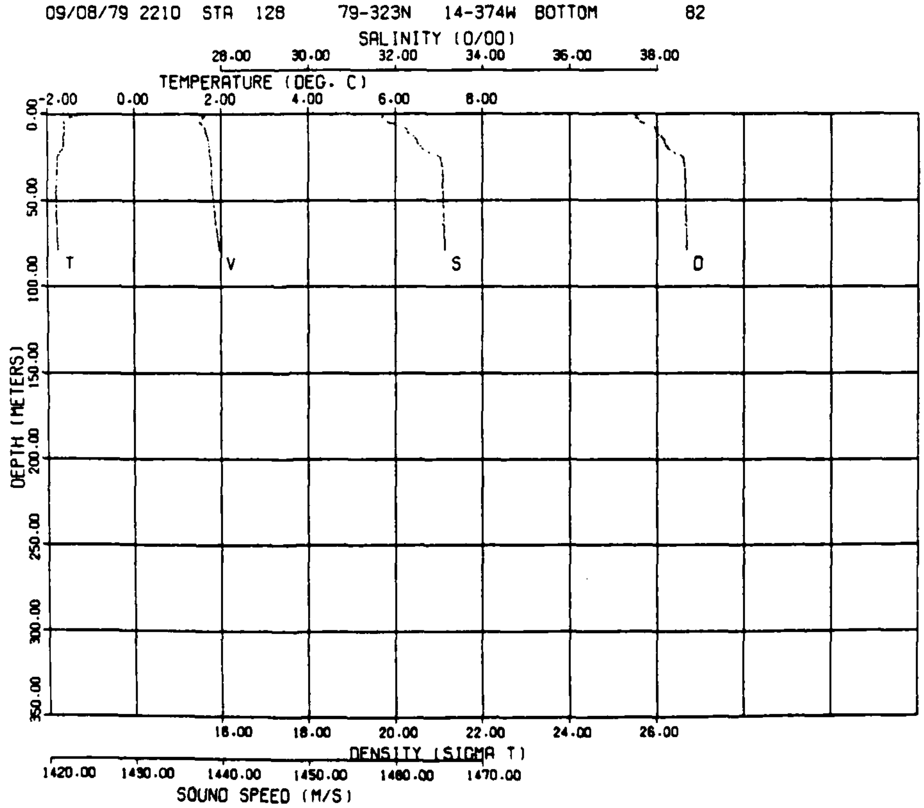

09/06/79 1819 STA 125 79-299N 14-309W BOTTOM 97
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

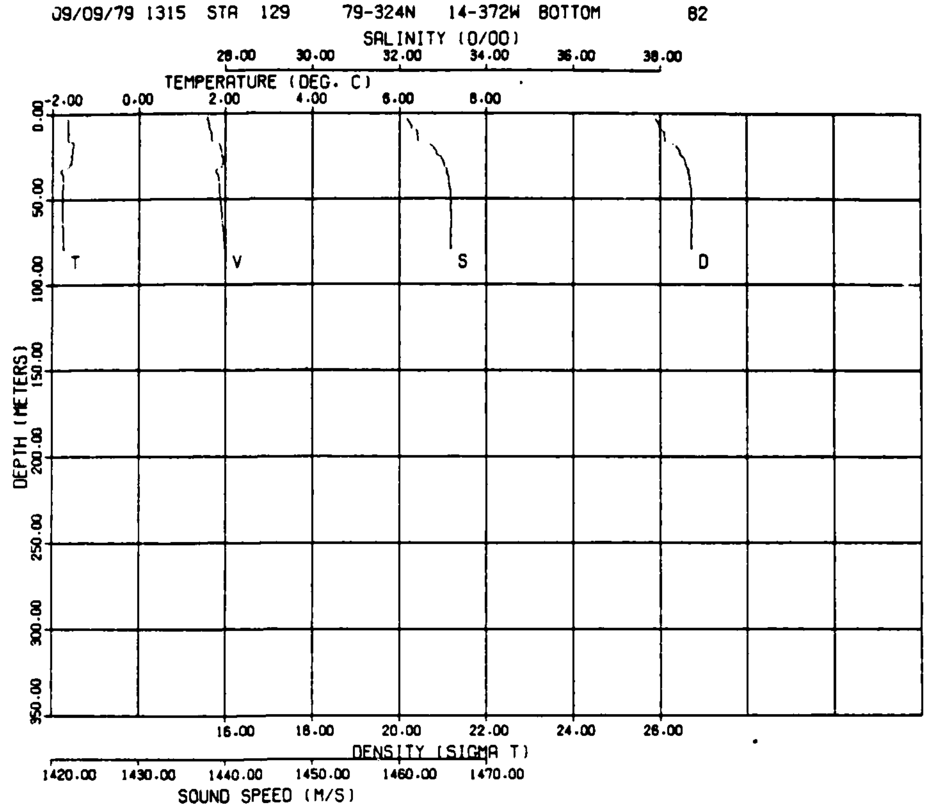

09/07/79 2125 STA 126 79-323N 14-372W BOTTOM 82
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

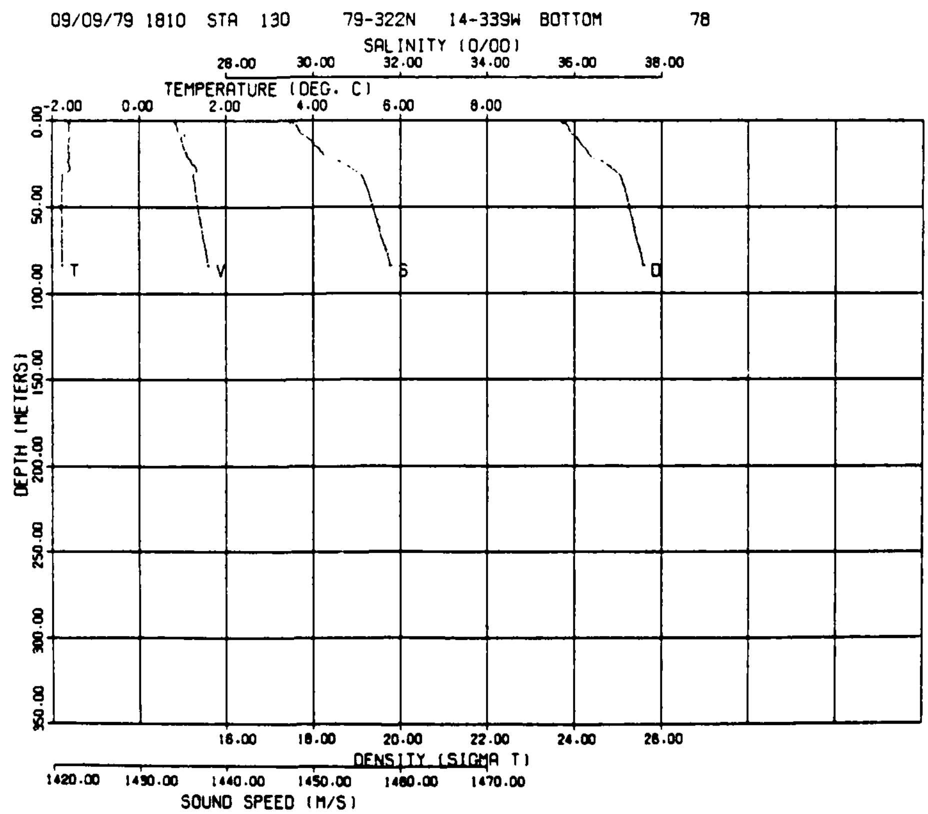
09/08/79 1225 STA 127 79-323N 14-374W BOTTOM 82

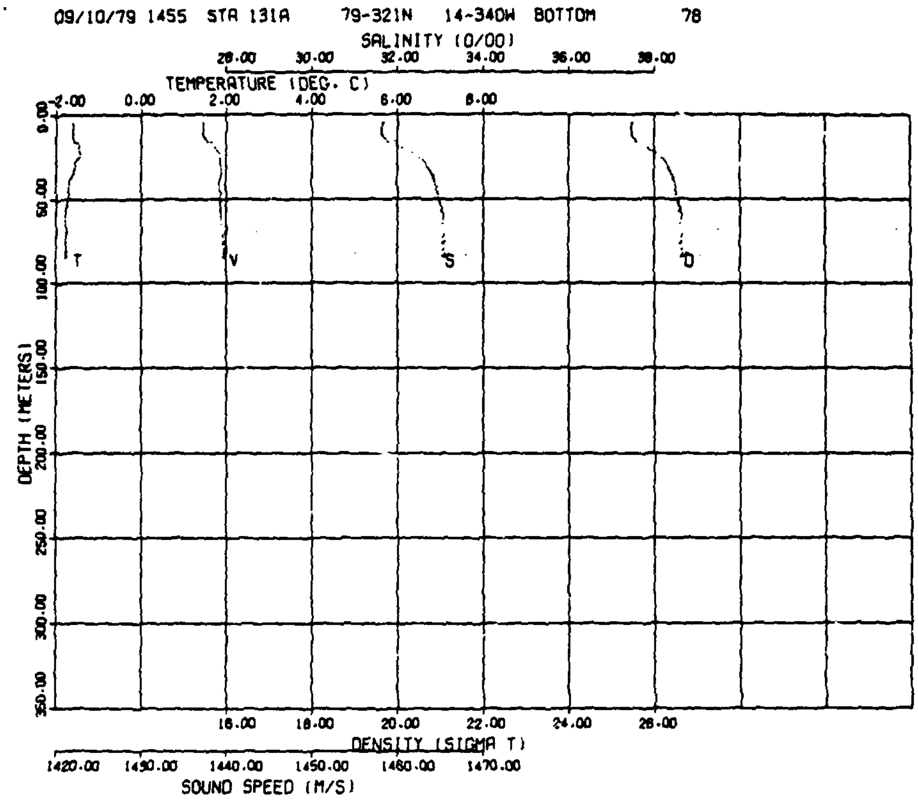


09/08/79 2210 STA 128 79-323N 14-374W BOTTOM 82



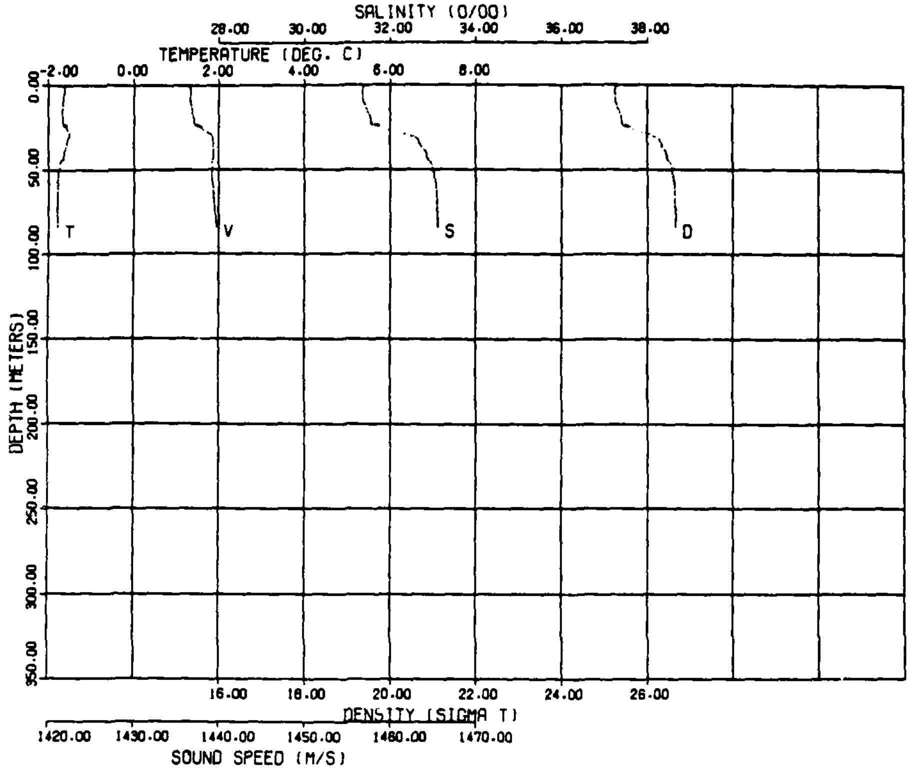

09/09/79 1315 STA 129 79-324N 14-372W BOTTOM 82
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/09/79 1810 STA 130 79-322N 14-339W BOTTOM 78
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

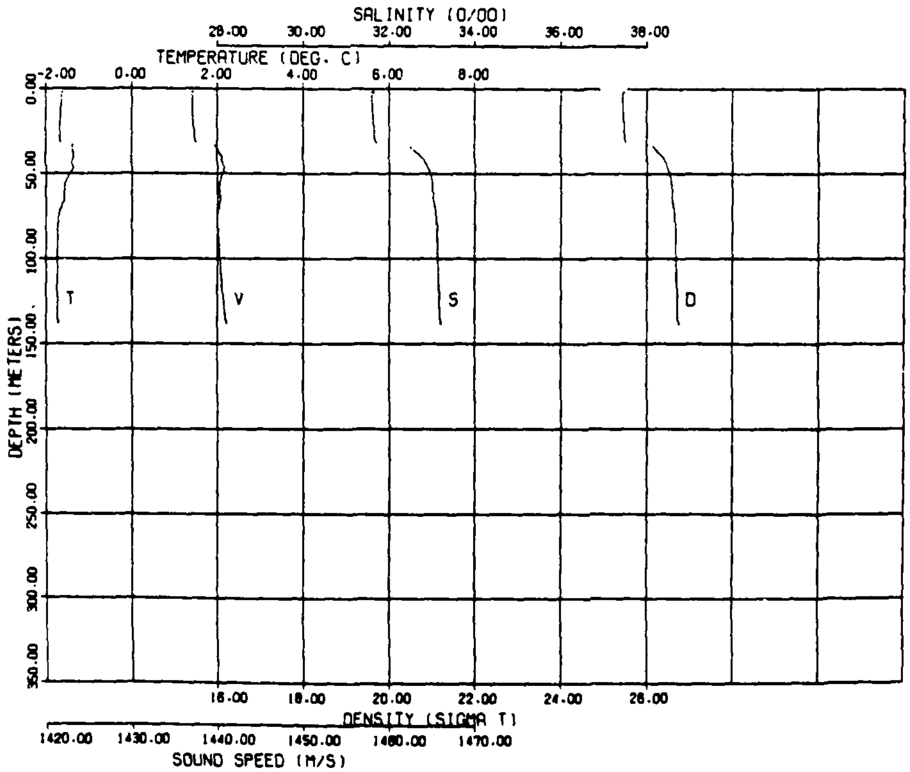


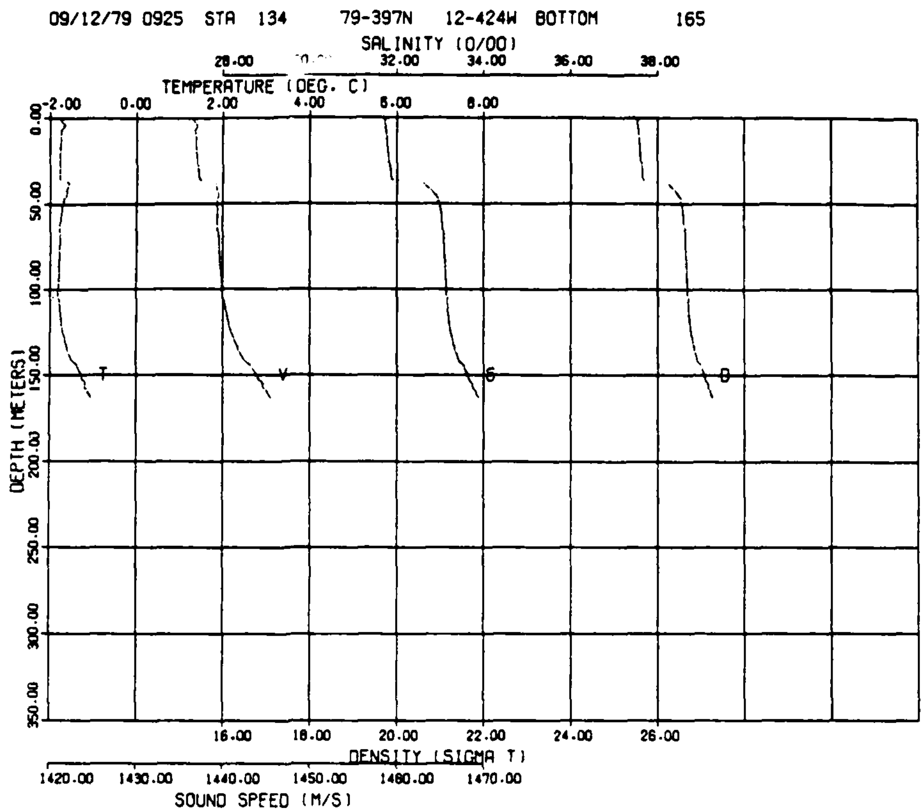
09/10/79 1455 STA 131A 79-321N 14-340W BOTTOM 78
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

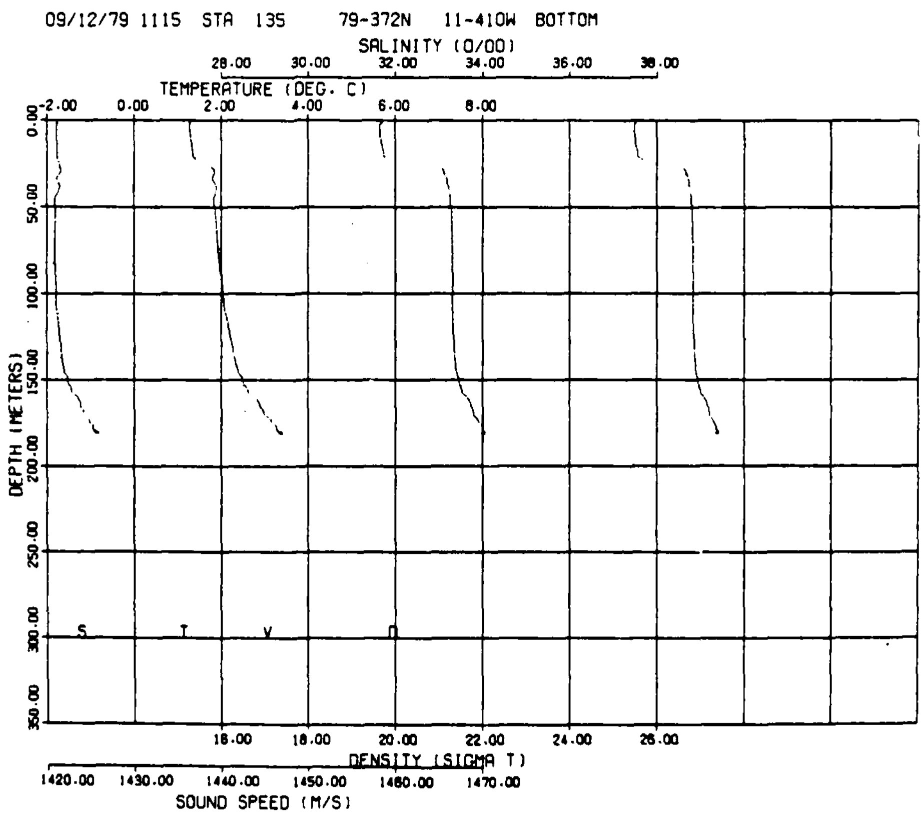
09/11/79 0715 STA 132 79-329N 14-103W BOTTOM 100



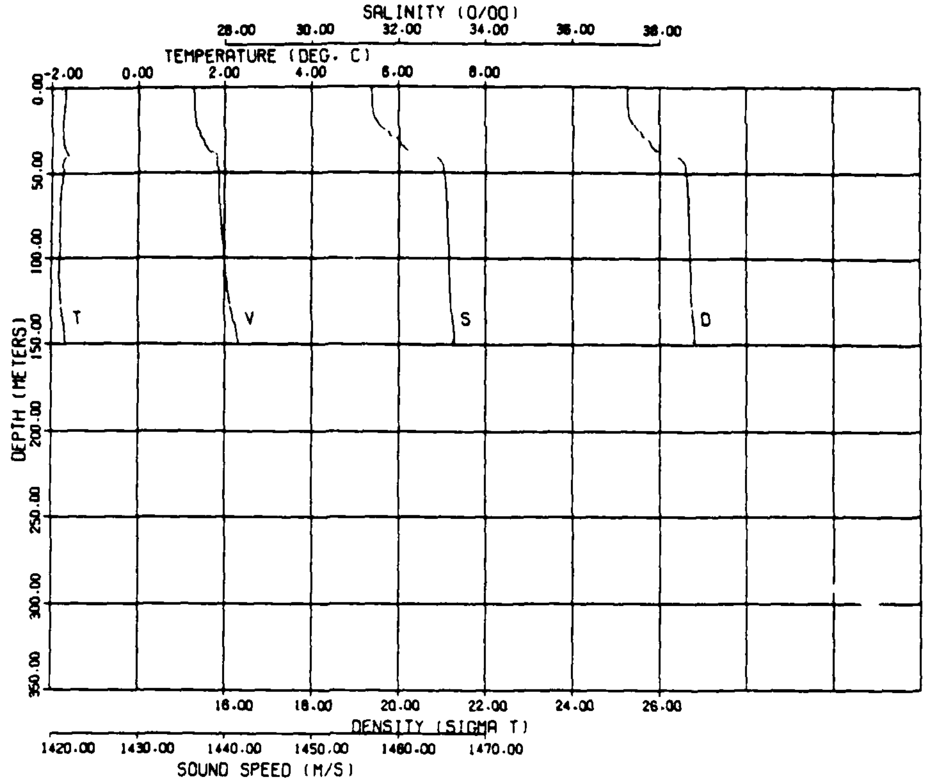
09/12/79 0720 STA 133 79-367N 13-512W BOTTOM 155



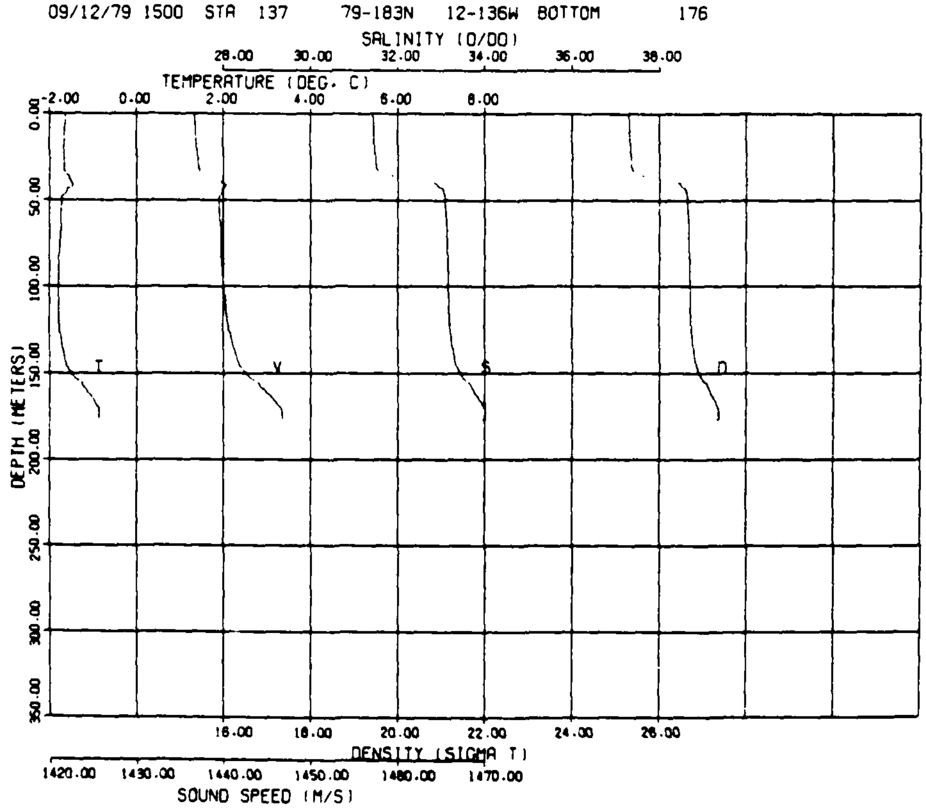

09/12/79 0925 STA 134 79-397N 12-424W BOTTOM
SALINITY (0/00)
28.00
32.00
34.00
36.00
38.00
TEMPERATURE (DEG. C)
-2.00
0.00
2.00
4.00
6.00
8.00
DEPTH (METERS)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
T
V
S
D
16.00
18.00
20.00
22.00
24.00
26.00
DENSITY (SIGMA T)
1420.00
1430.00
1440.00
1450.00
1460.00
1470.00
SOUND SPEED (M/S)

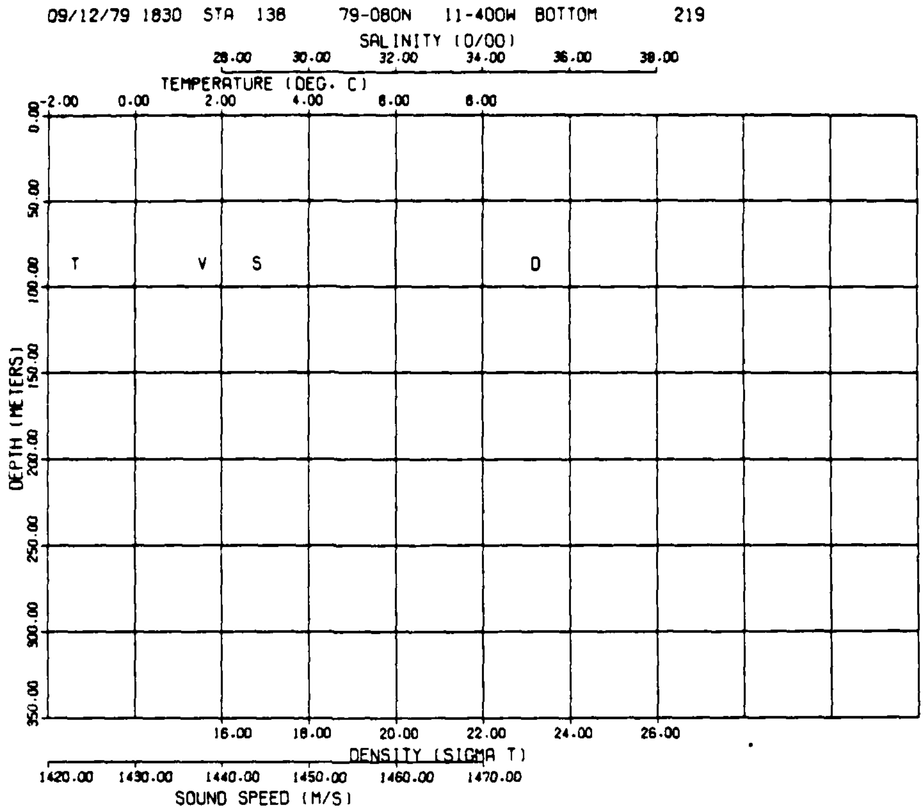

09/12/79 1115 STA 135 79-372N 11-410W BOTTOM
SALINITY (0/00)
28.00
30.00
32.00
34.00
36.00
38.00
TEMPERATURE (DEG. C)
-2.00
0.00
2.00
4.00
6.00
8.00
DEPTH (METERS)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
S
T
V
D
16.00
18.00
20.00
22.00
24.00
26.00
DENSITY (SIGMA T)
1420.00
1430.00
1440.00
1450.00
1460.00
1470.00
SOUND SPEED (M/S)

09/12/79 1330 STA 136 79-306N 12-378W BOTTOM 210

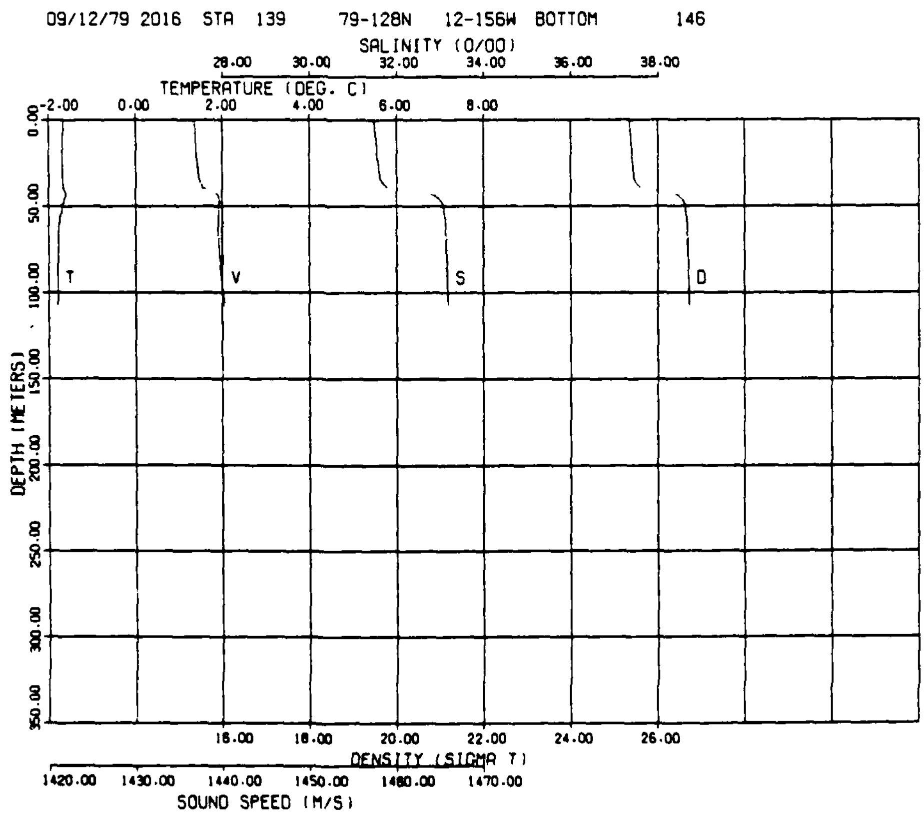


09/12/79 1500 STA 137 79-183N 12-136W BOTTOM 176



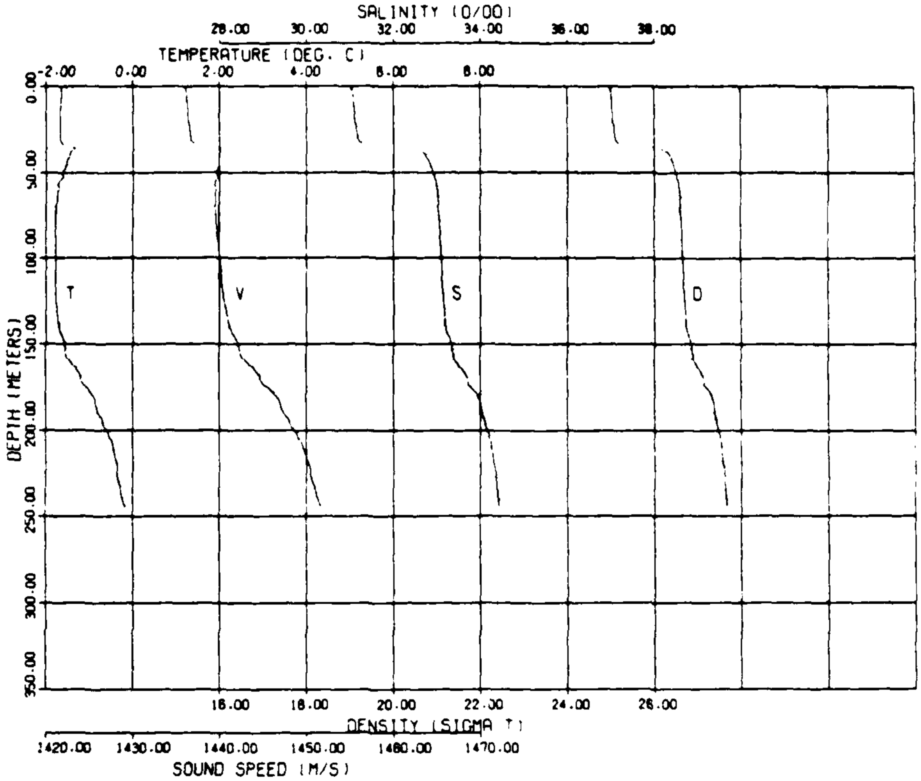


09/12/79 1830 STA 138 79-080N 11-400W BOTTOM 219
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

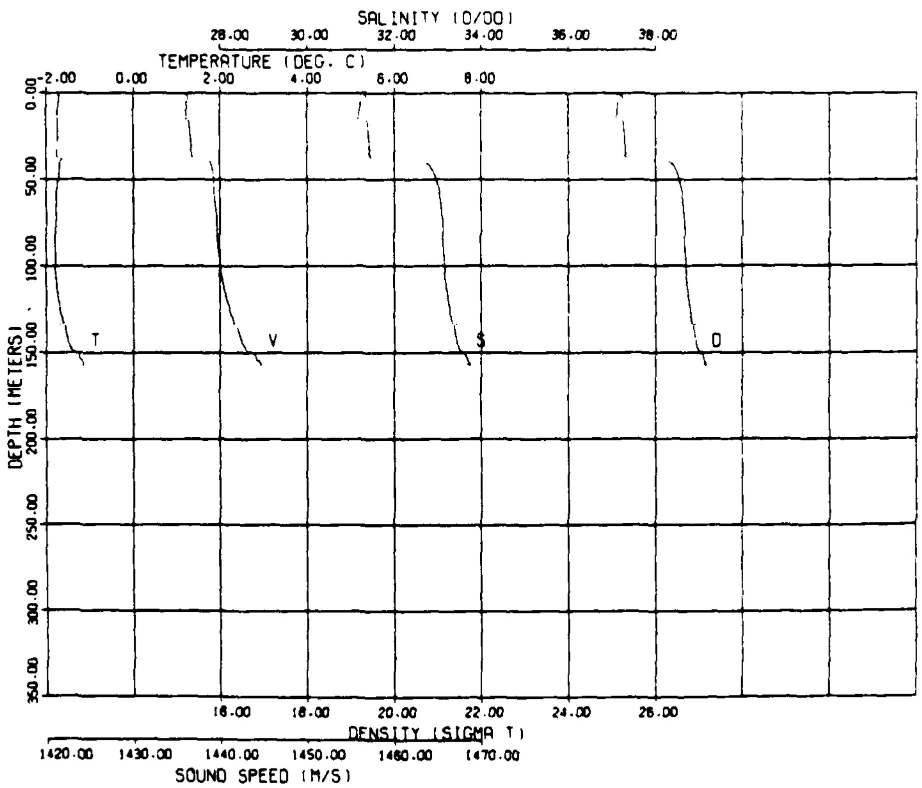


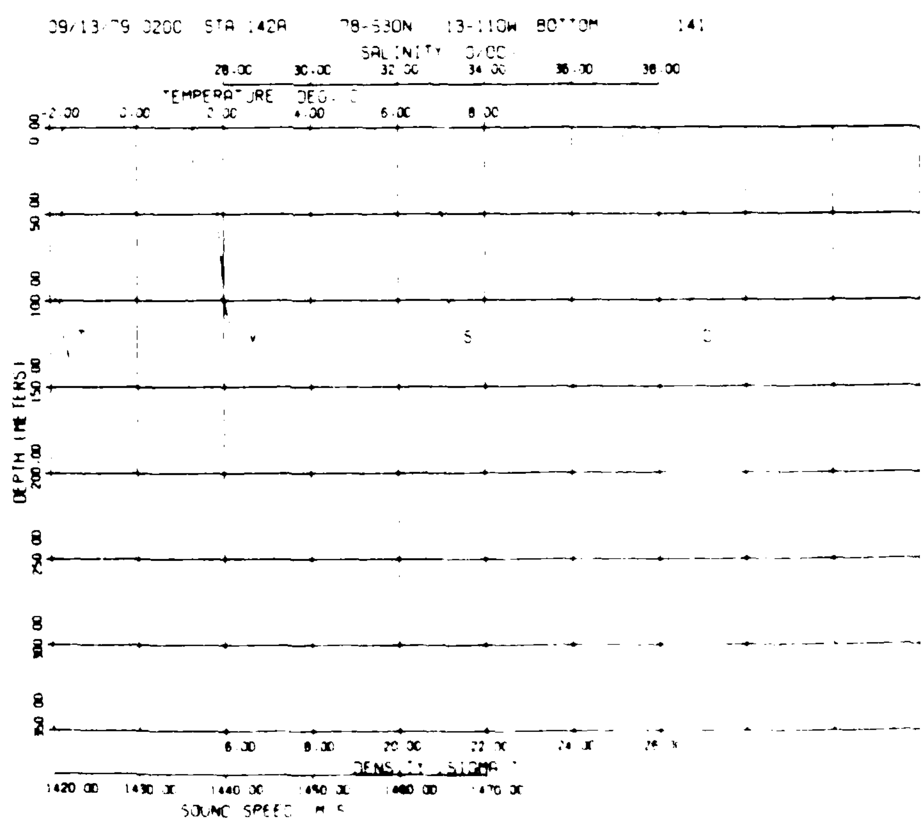
09/12/79 2016 STA 139 79-128N 12-156W BOTTOM 146
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

09/12/79 2200 STA 140 79-038N 11-541W BOTTOM 366



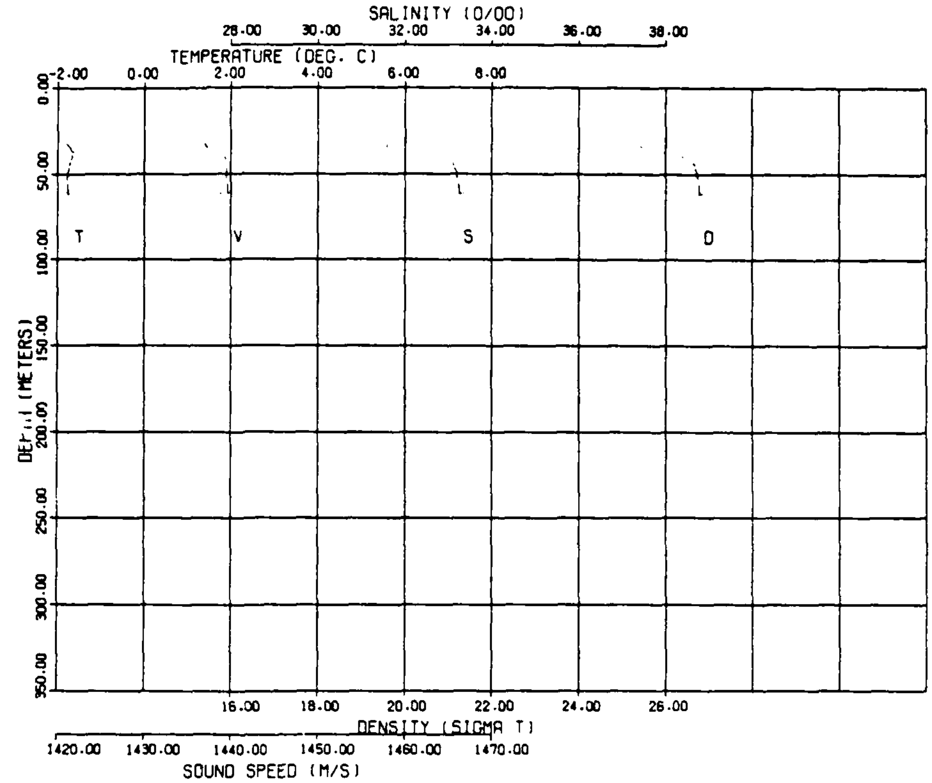
09/12/79 2350 STA 141A 78-590N 12-308W BOTTOM 165



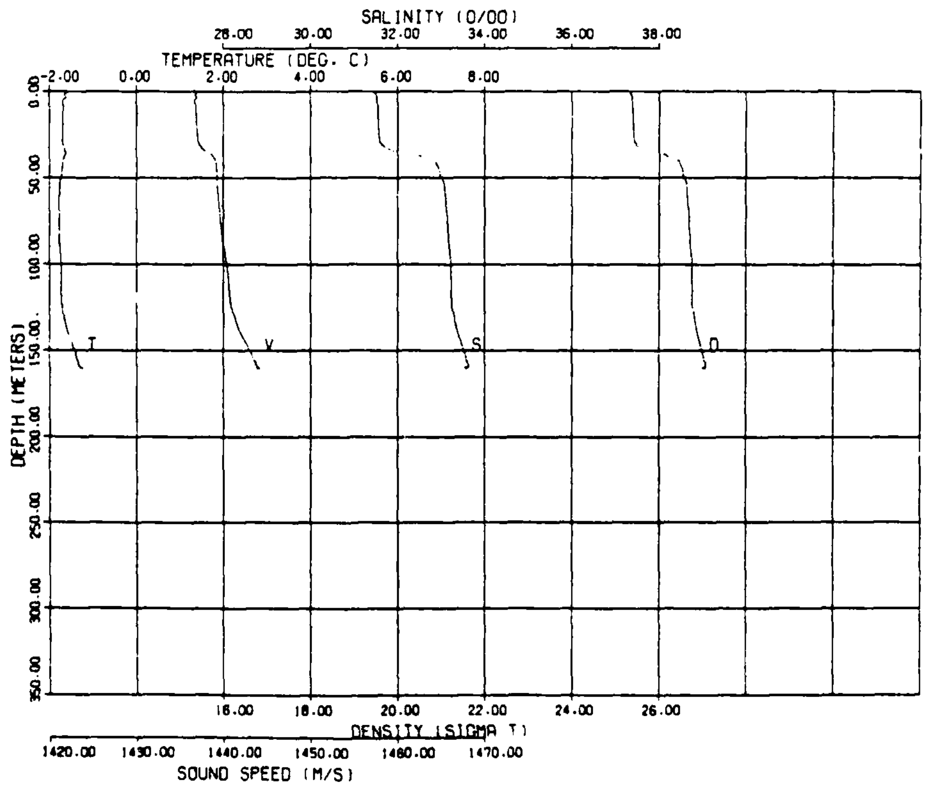


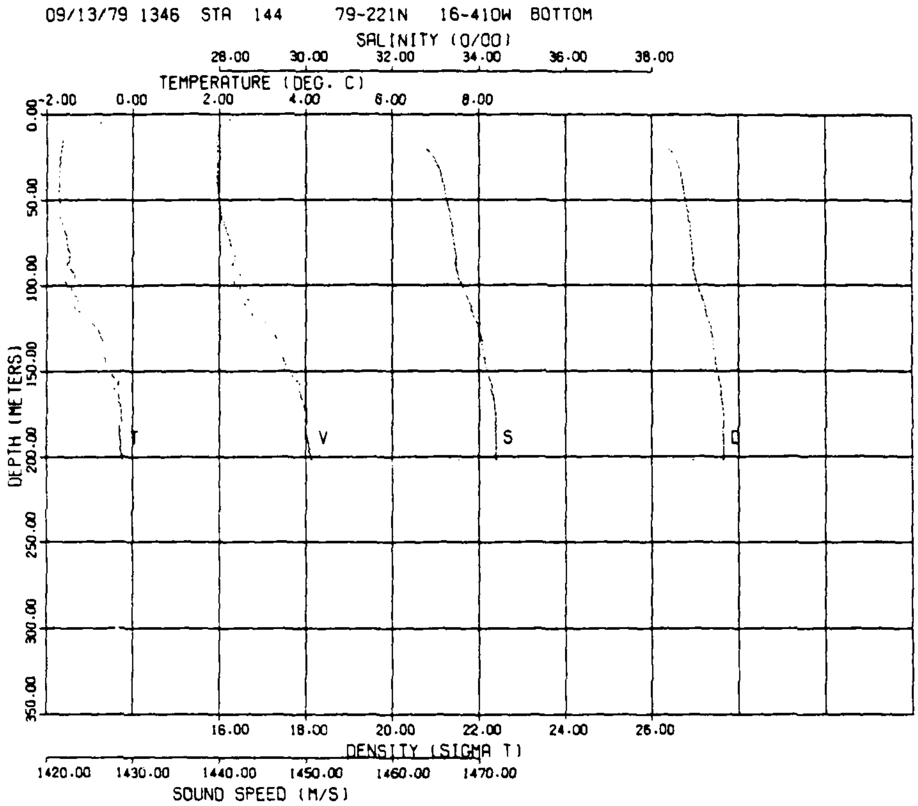
09/13/79 0200 STA 142A 78-530N 13-110W BOTTOM 141
SALINITY 0/00
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE DEG. C
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
6.00 8.00 20.00 22.00 24.00
DENSITY SIGMA T
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED M/S

09/13/79 0215 STA 1428 78-530N 13-110W BOTTOM 141

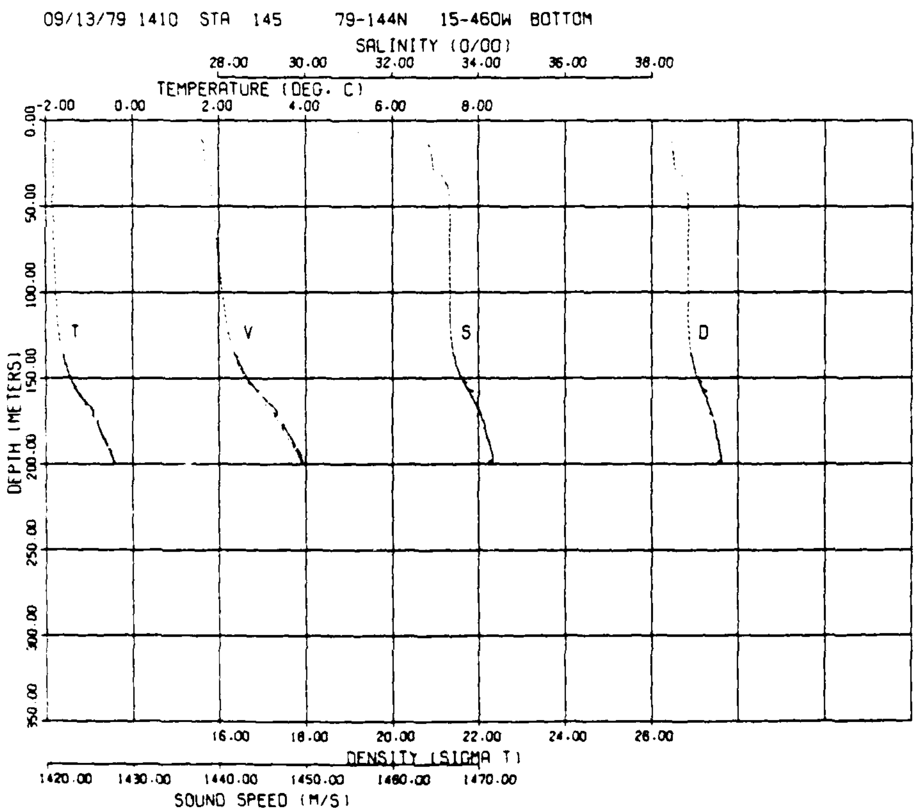


09/13/79 0655 STA 143 78-540N 13-560W BOTTOM 146

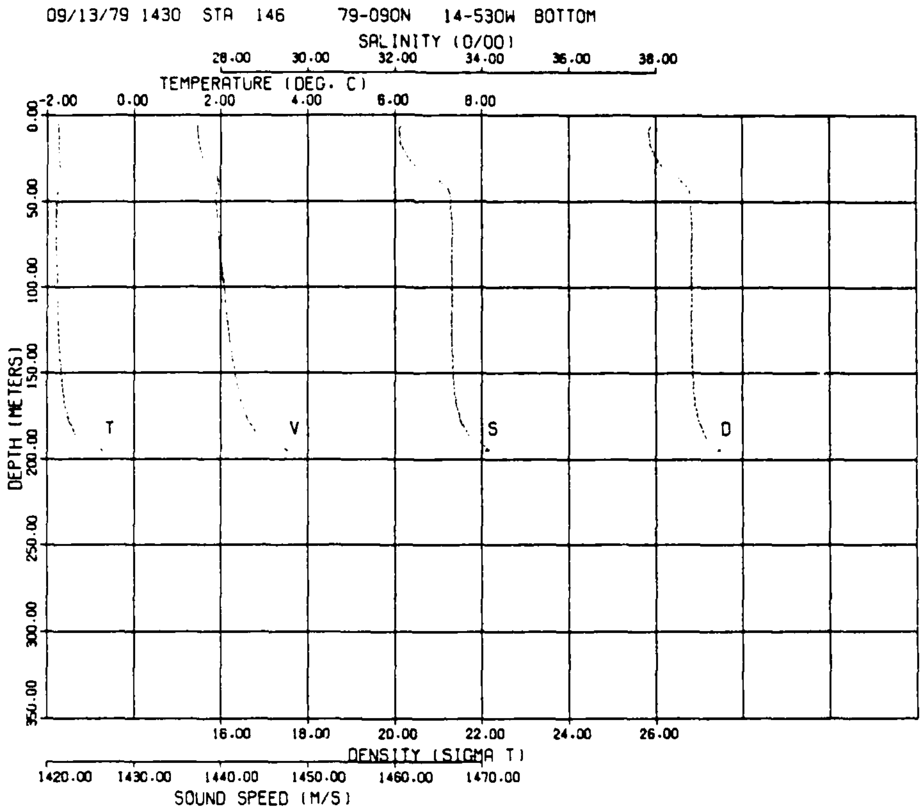


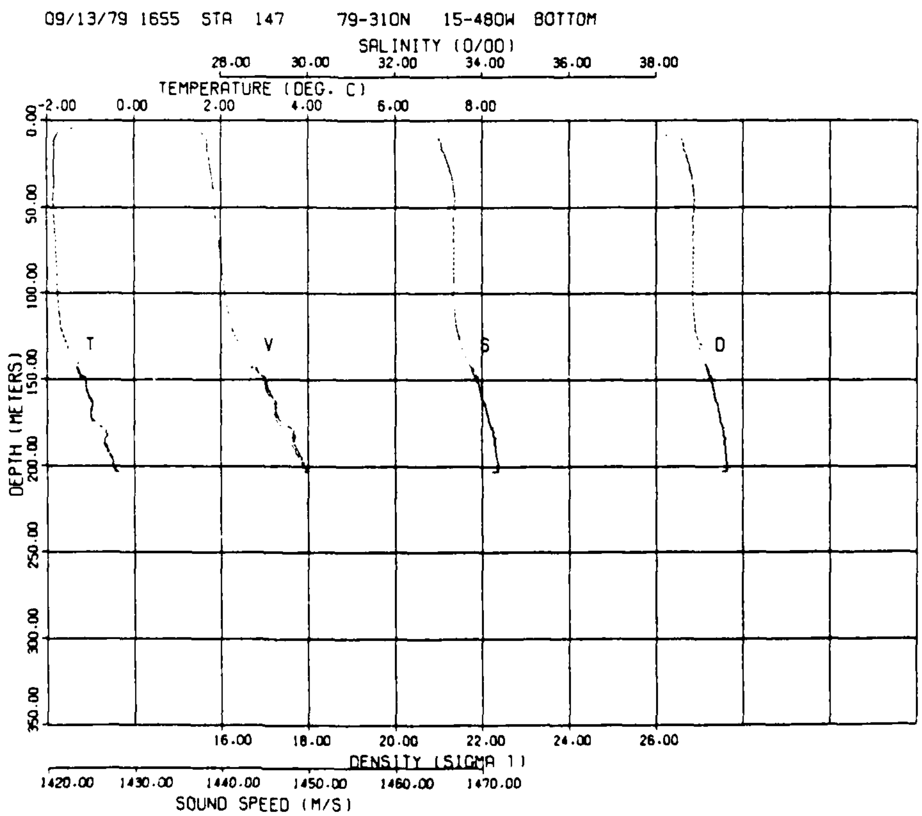


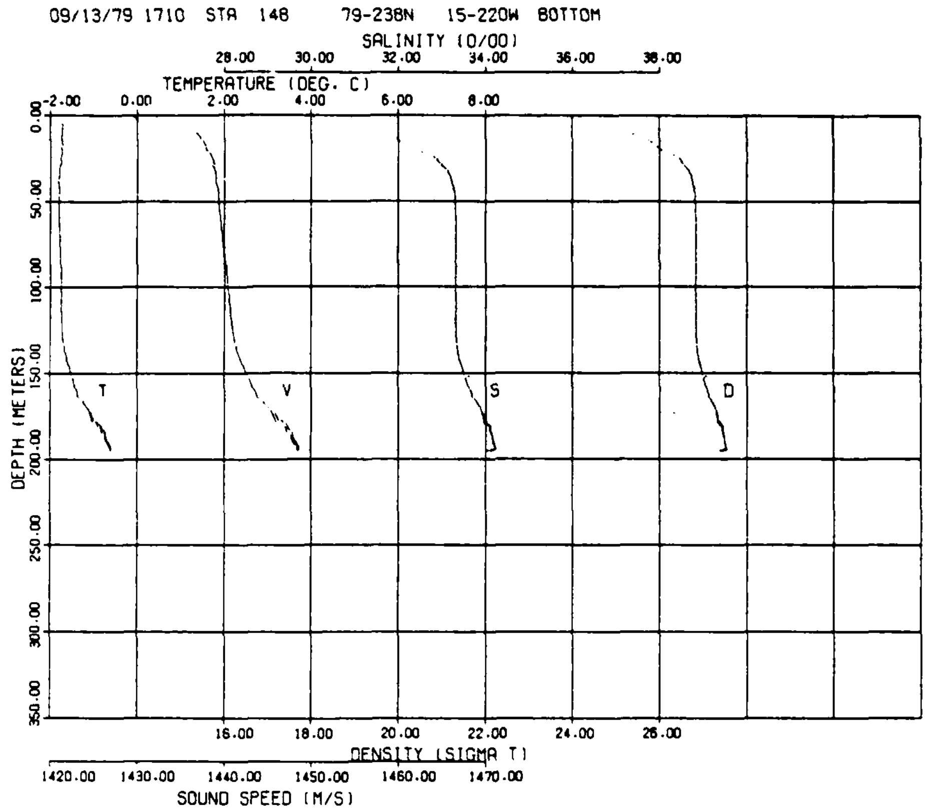
09/13/79 1346 STA 144 79-221N 16-410W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



09/13/79 1410 STA 145 79-144N 15-460W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/13/79 1430 STA 146 79-090N 14-530W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/13/79 1655 STA 147 79-310N 15-480W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/13/79 1710 STA 148 79-238N 15-220W BOTTOM
SALINITY (0/00)
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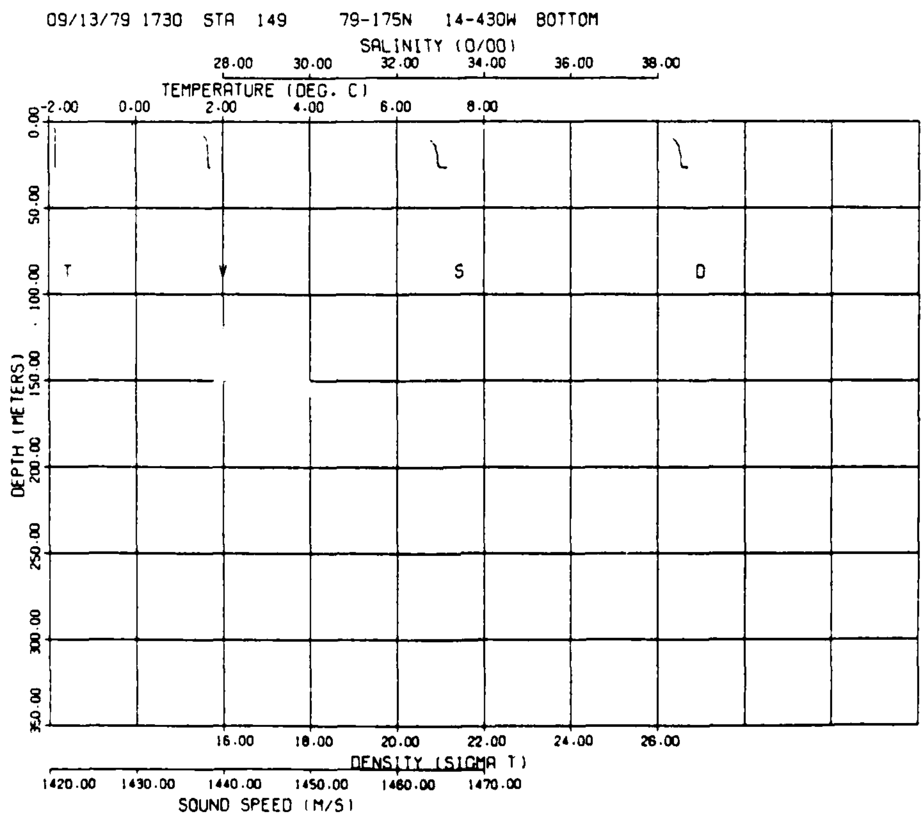
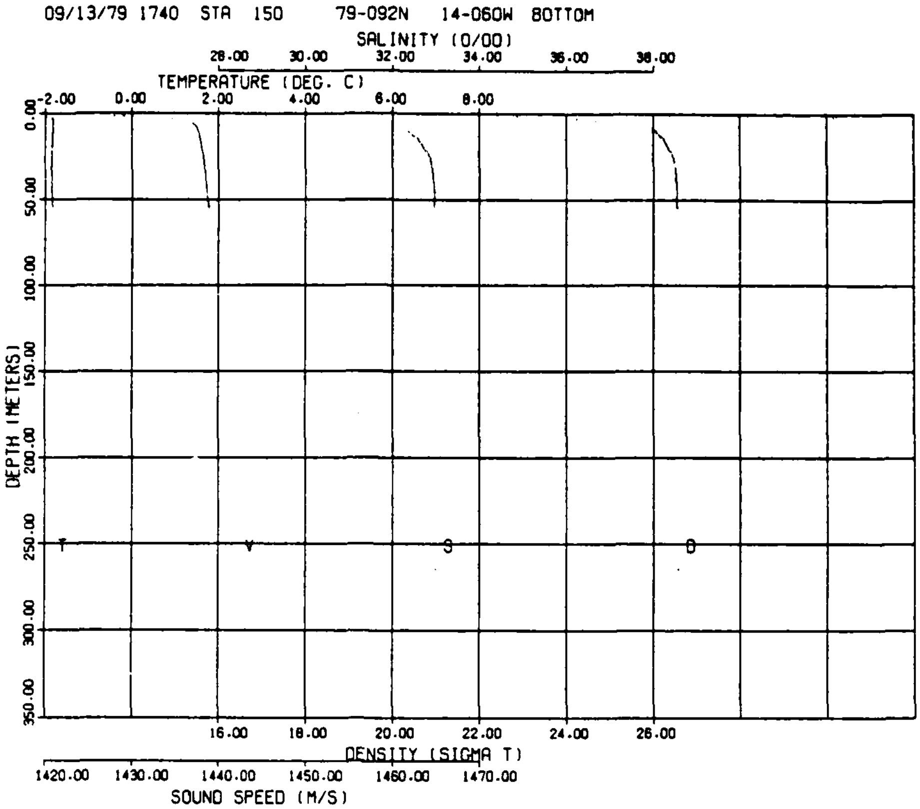
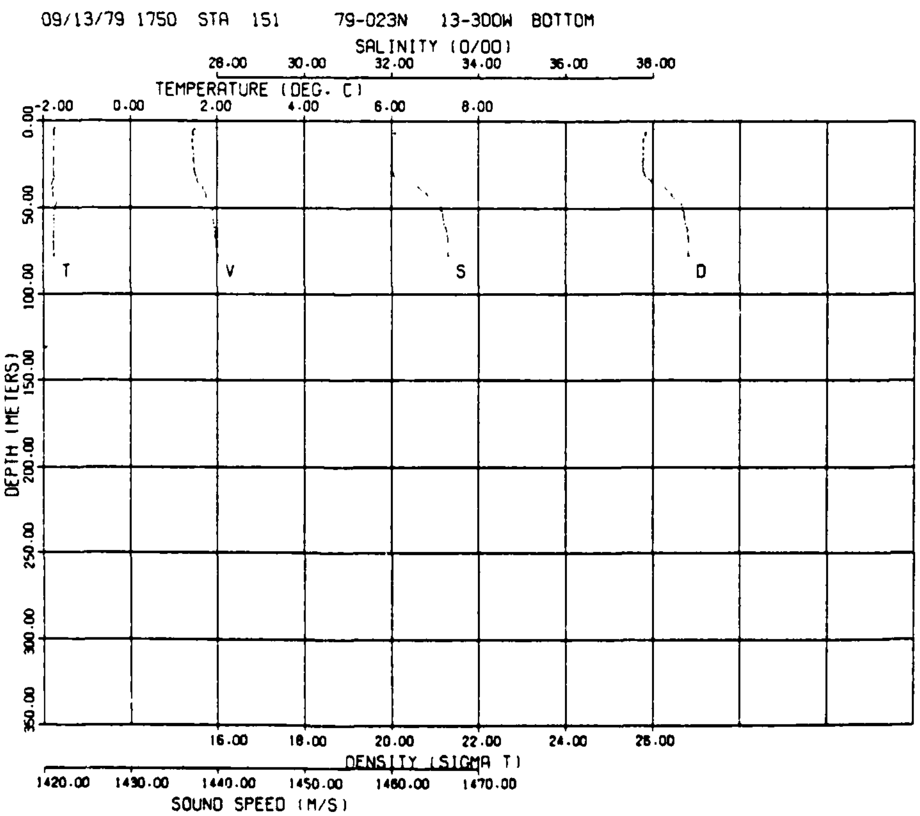
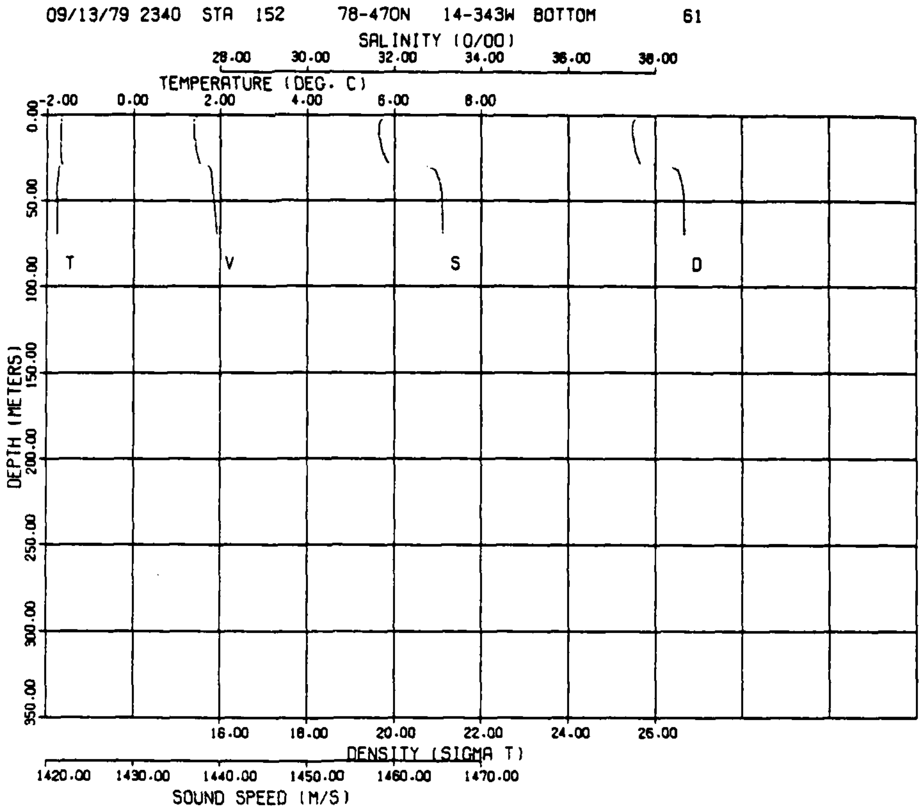
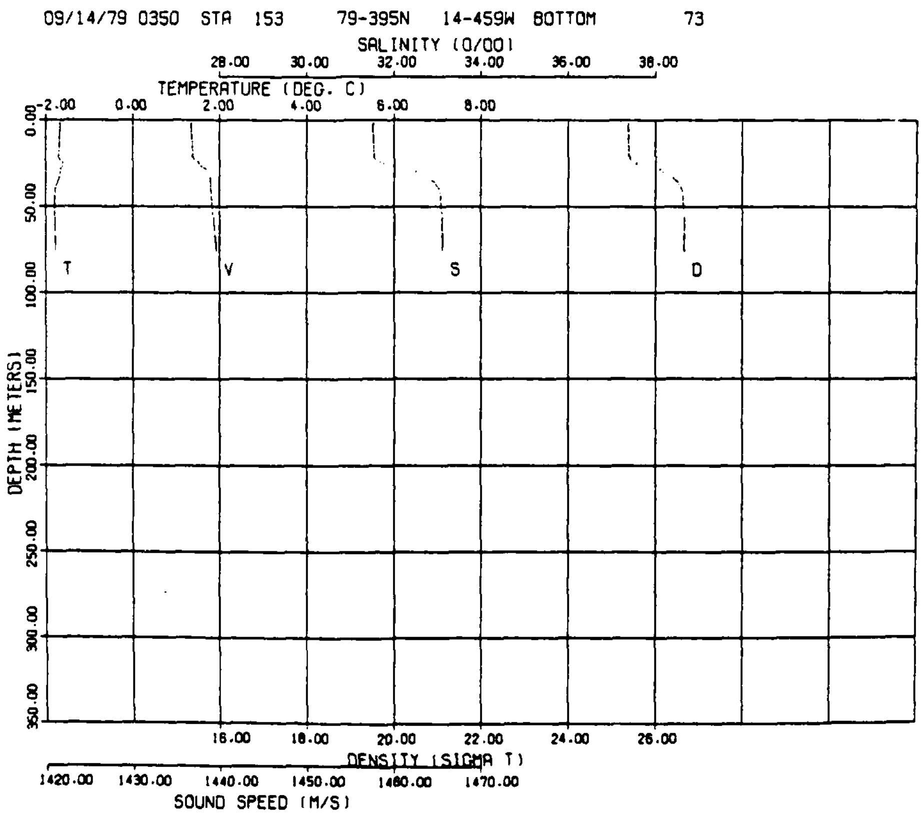
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/13/79 1730 STA 149 79-175N 14-430W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

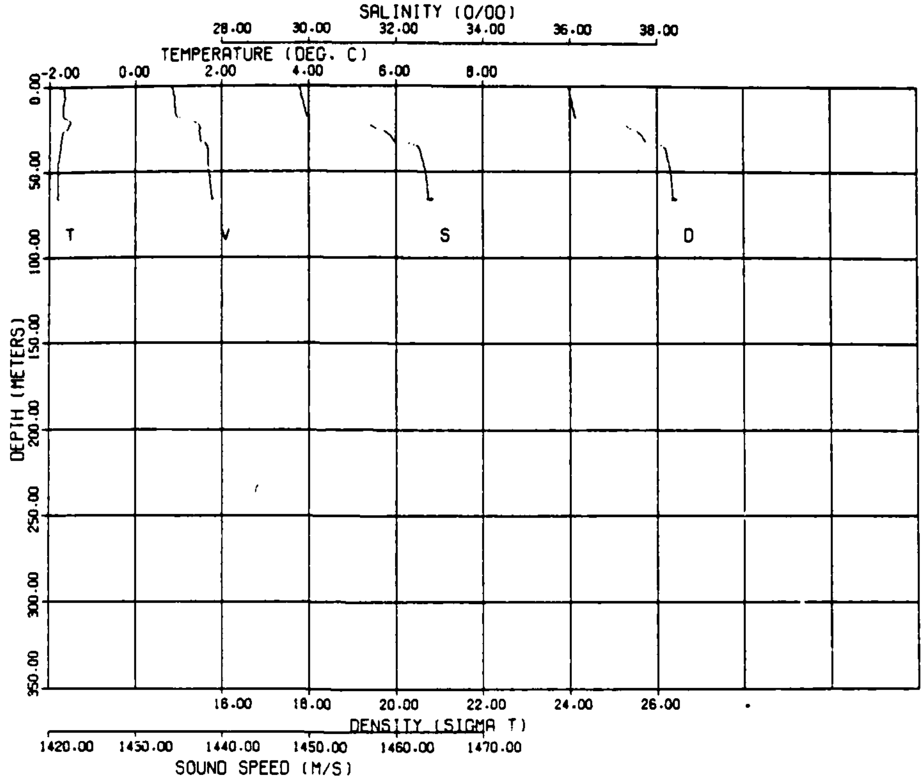

09/13/79 1740 STA 150 79-092N 14-060W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/13/79 1750 STA 151 79-023N 13-300W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

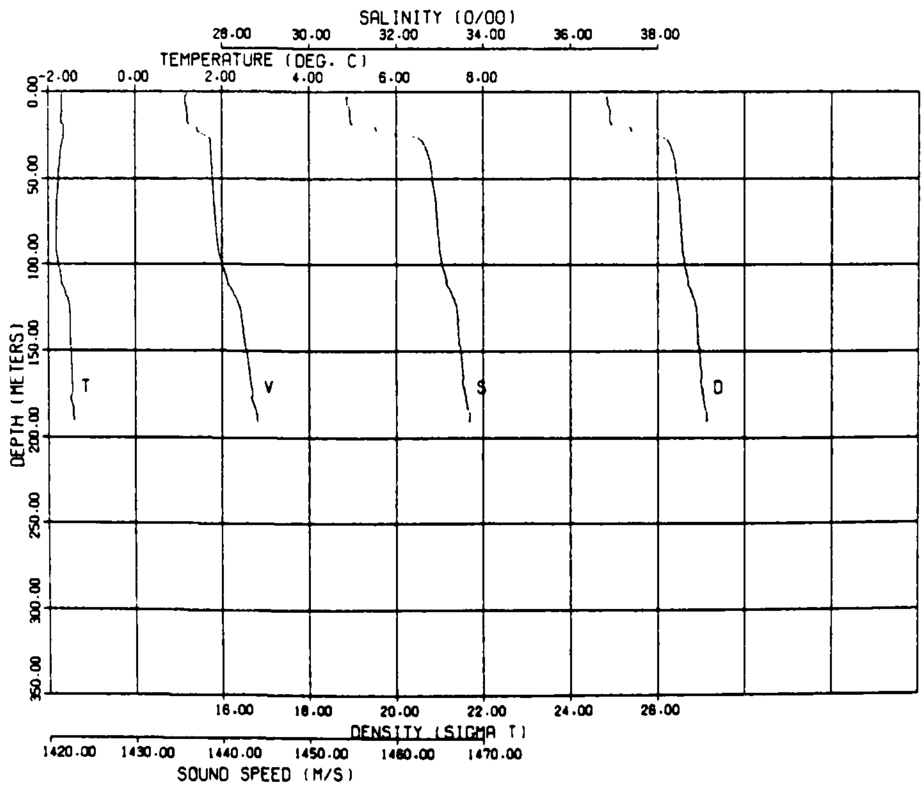

09/13/79 2340 STA 152 78-470N 14-343W BOTTOM 61
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/14/79 0350 STA 153 79-395N 14-459W BOTTOM 73
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

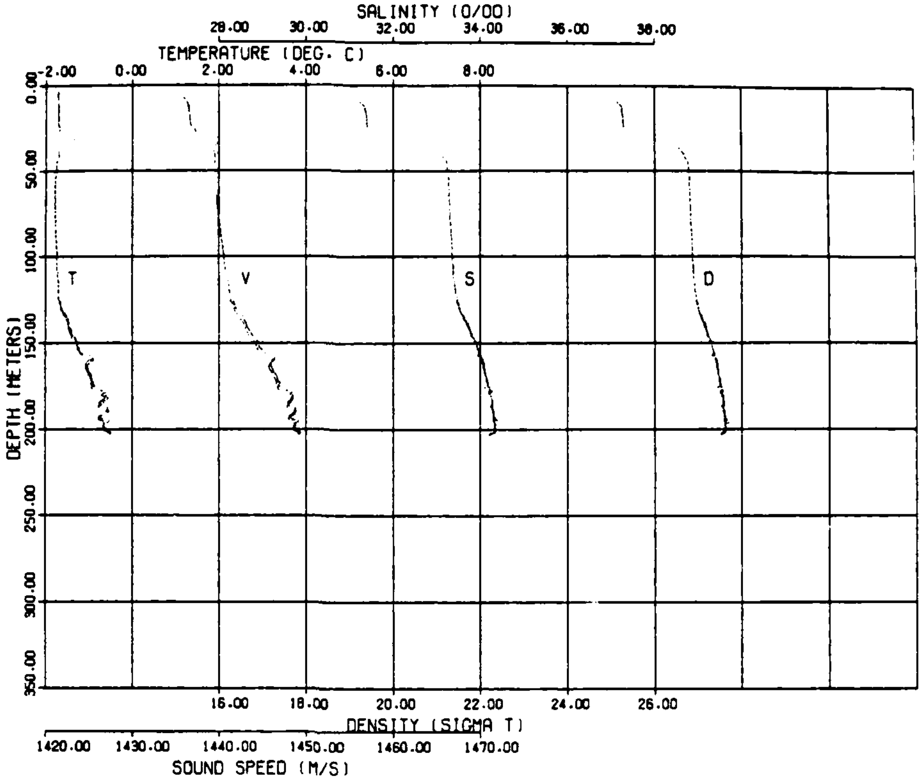
09/14/79 0750 STA 154 78-390N 14-581W BOTTOM 61



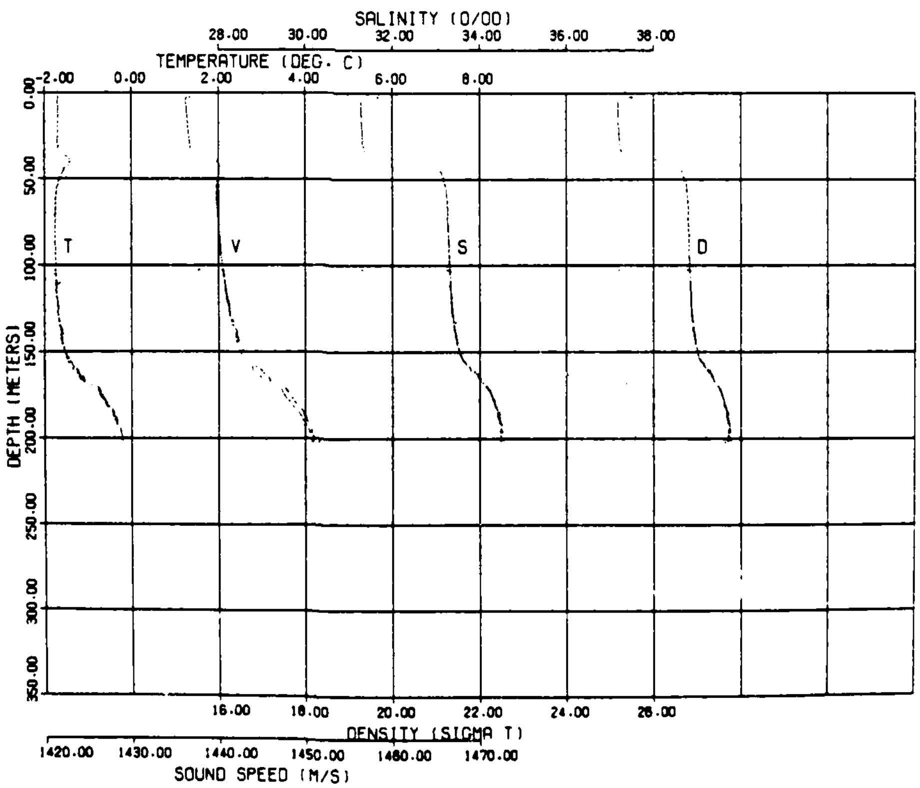
09/14/79 1127 STA 155 78-308N 16-005W BOTTOM 192



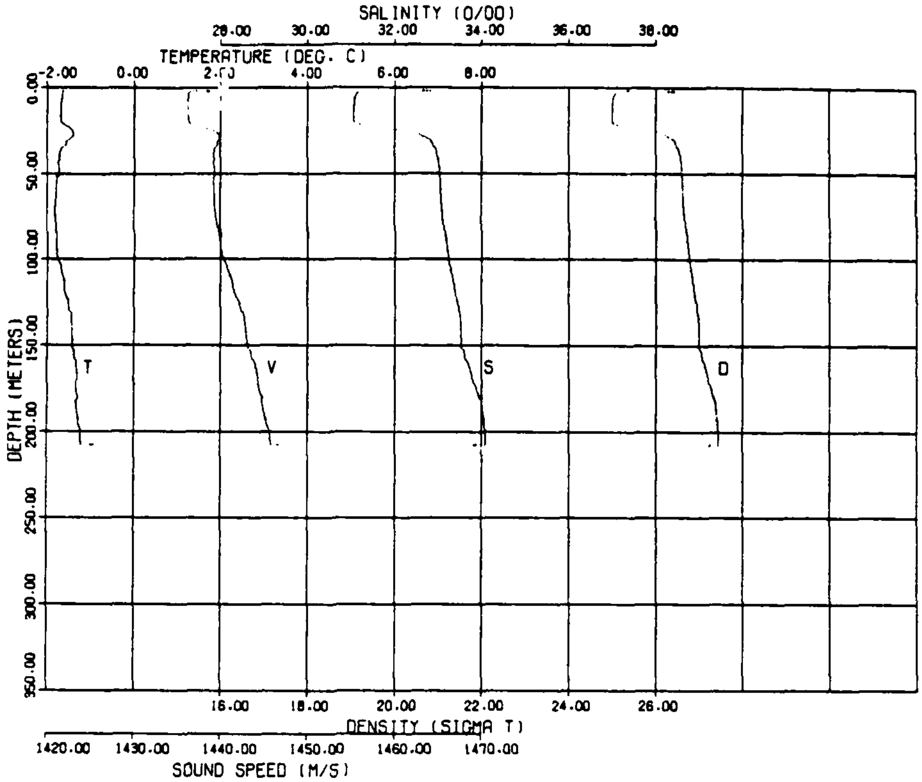
09/14/79 1610 STA 156 78-425N 17-340W BOTTOM



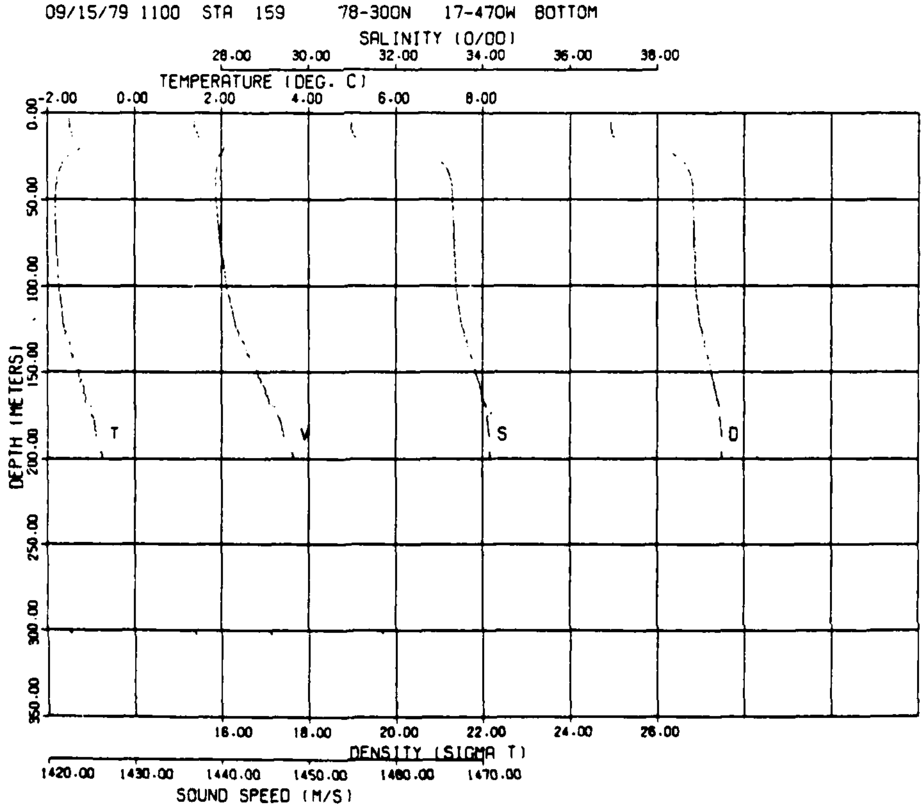
09/14/79 1700 STA 157 78-300N 16-350W BOTTOM



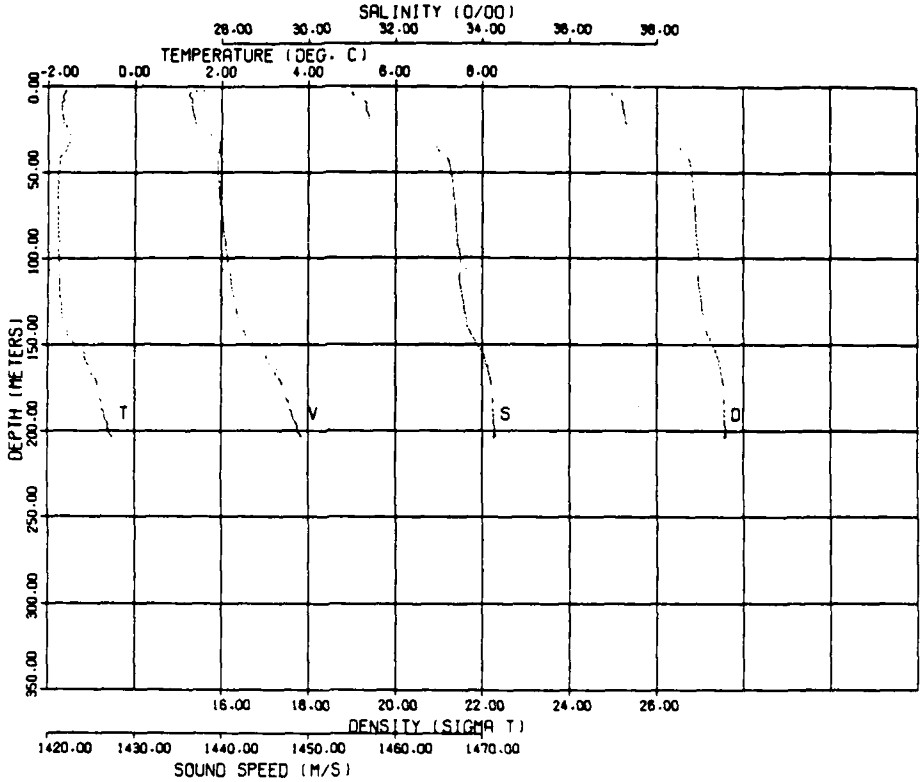
09/15/79 0000 STA 158 78-207N 15-416W BOTTOM



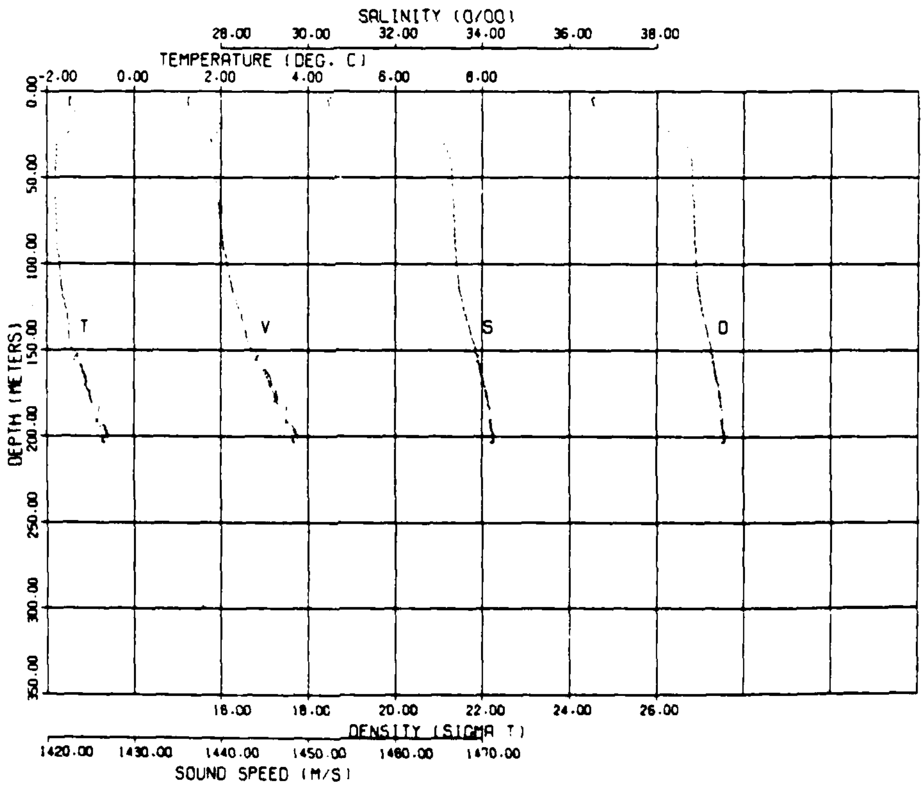
09/15/79 1100 STA 159 78-300N 17-470W BOTTOM



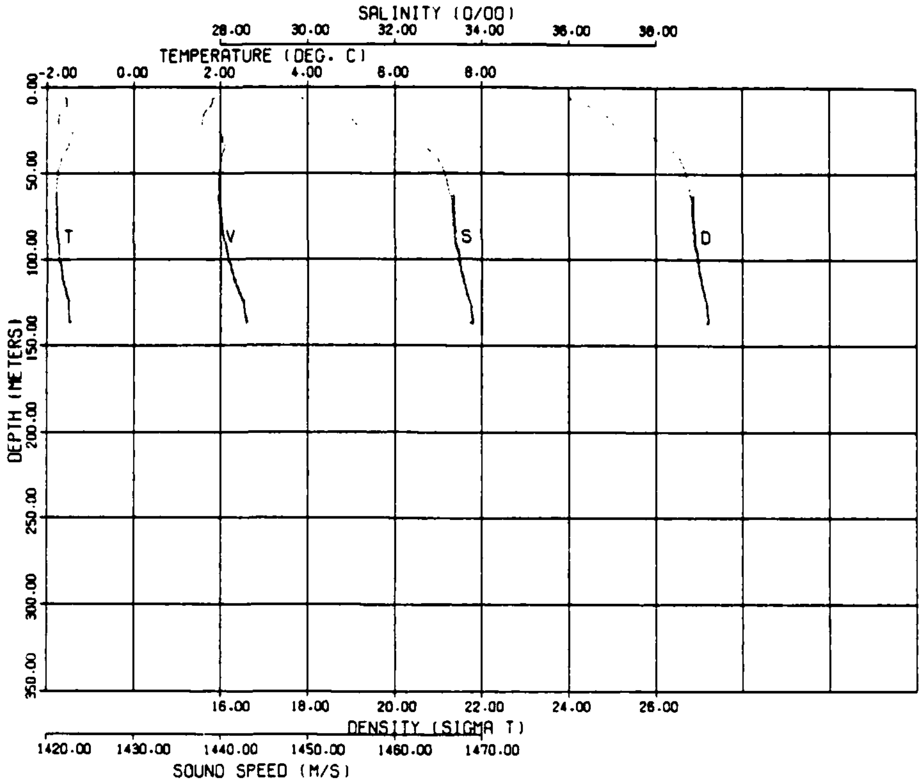
09/15/79 1130 STA 160 78-200N 18-190W BOTTOM



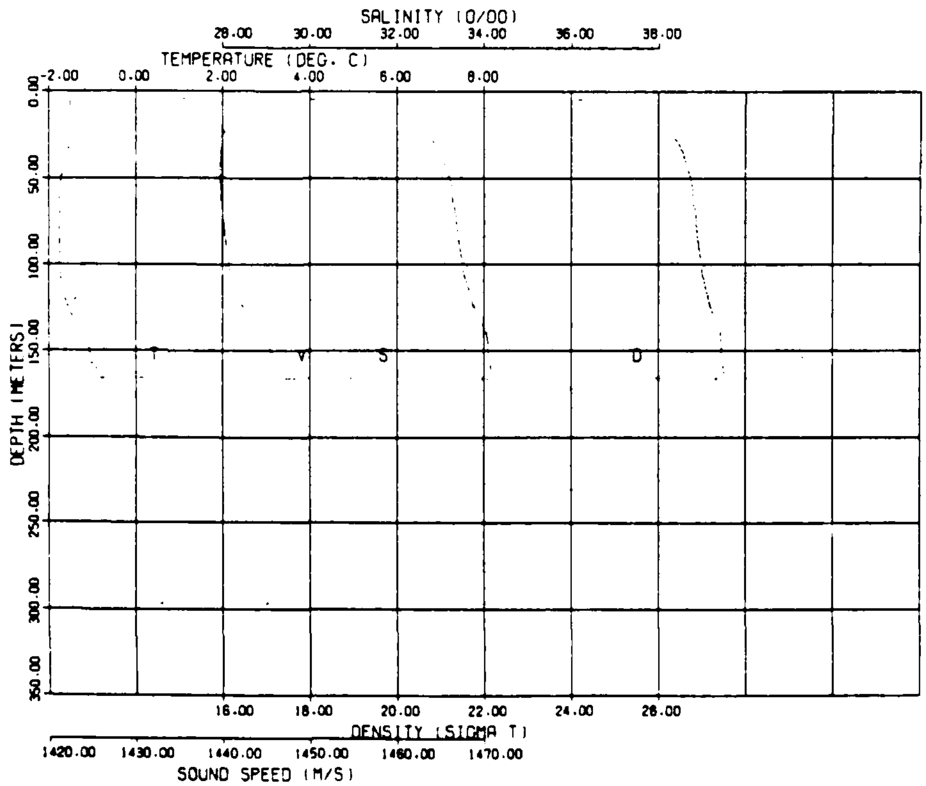
09/15/79 1200 STA 161 78-200N 18-050W BOTTOM

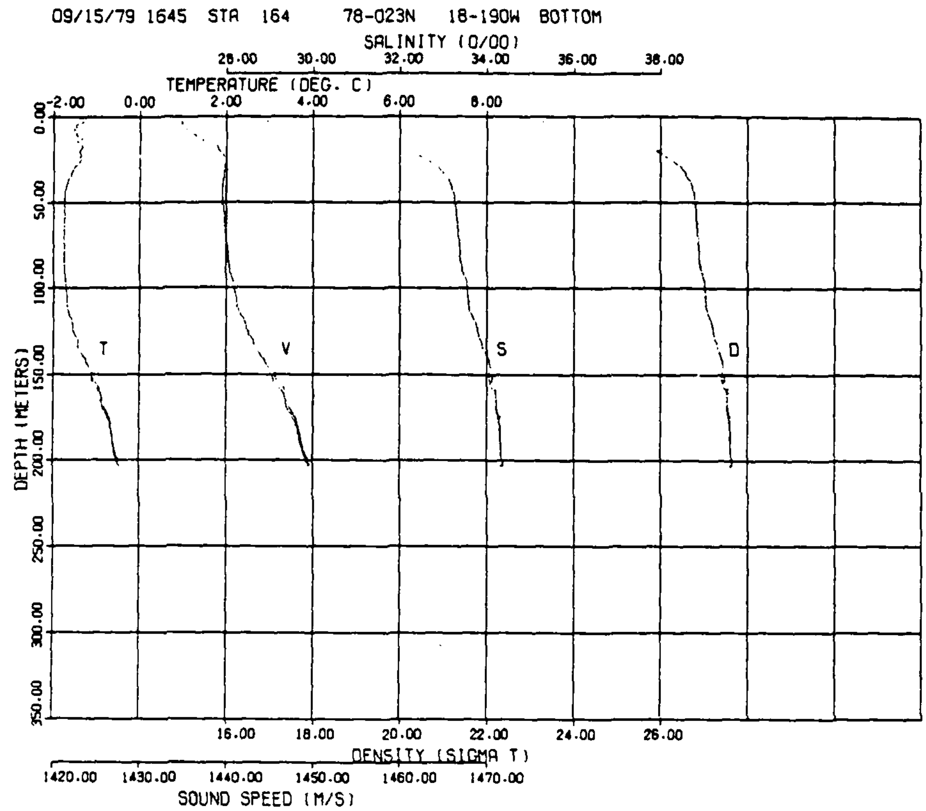


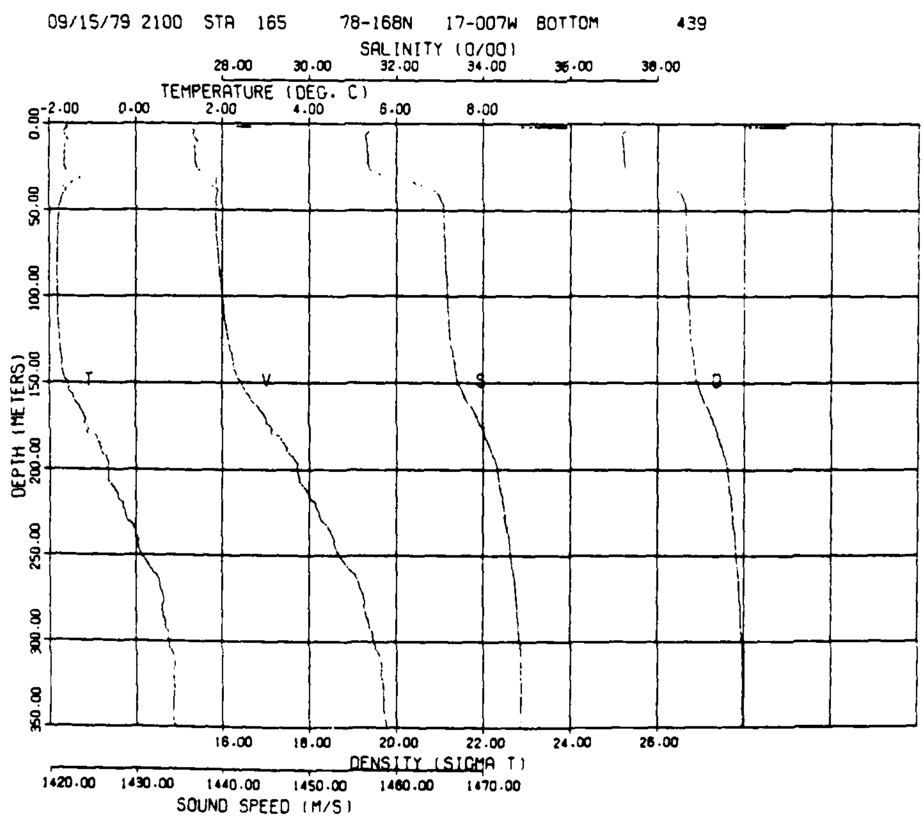
09/15/79 1545 STA 162 78-050N 18-010W BOTTOM



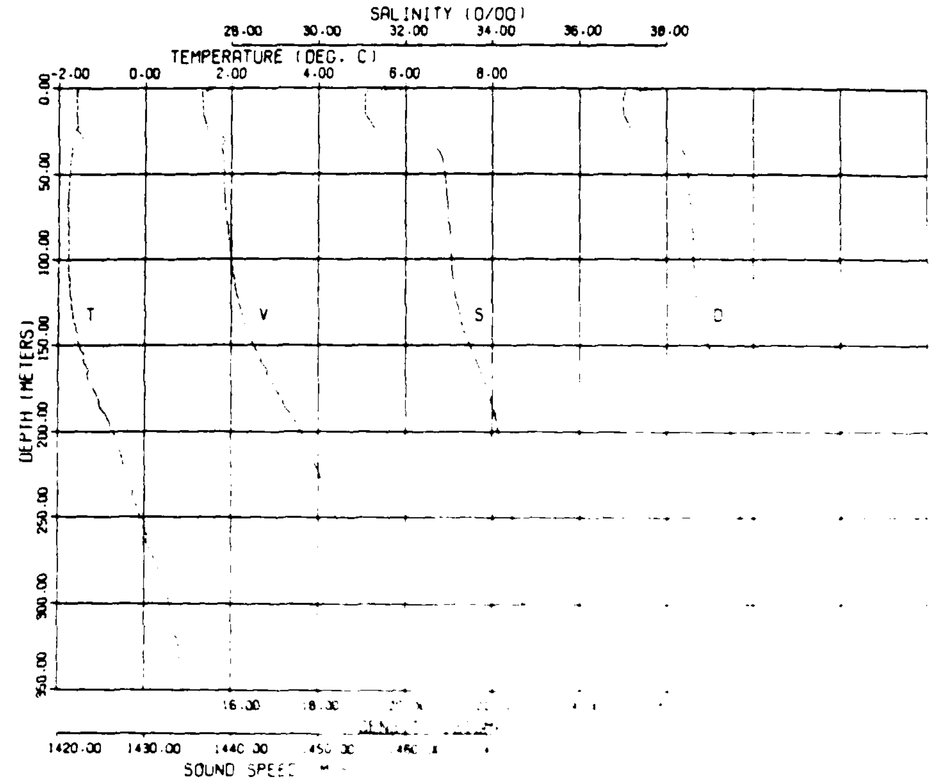
09/15/79 1605 STA 163 78-120N 18-225W BOTTOM

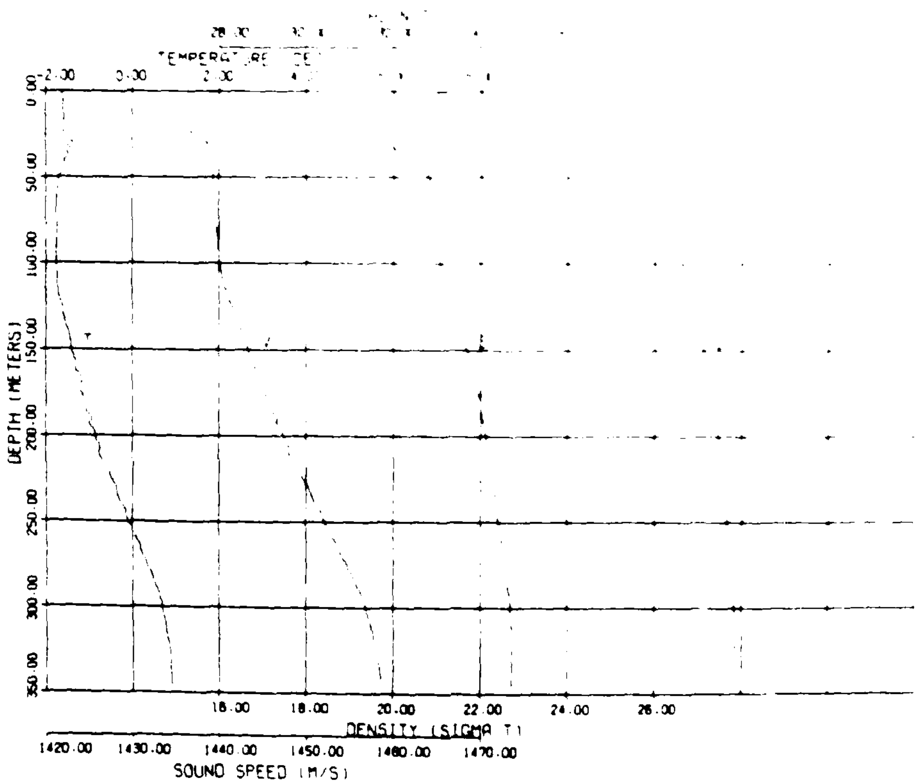



09/15/79 1645 STA 164 78-023N 18-190W BOTTOM
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

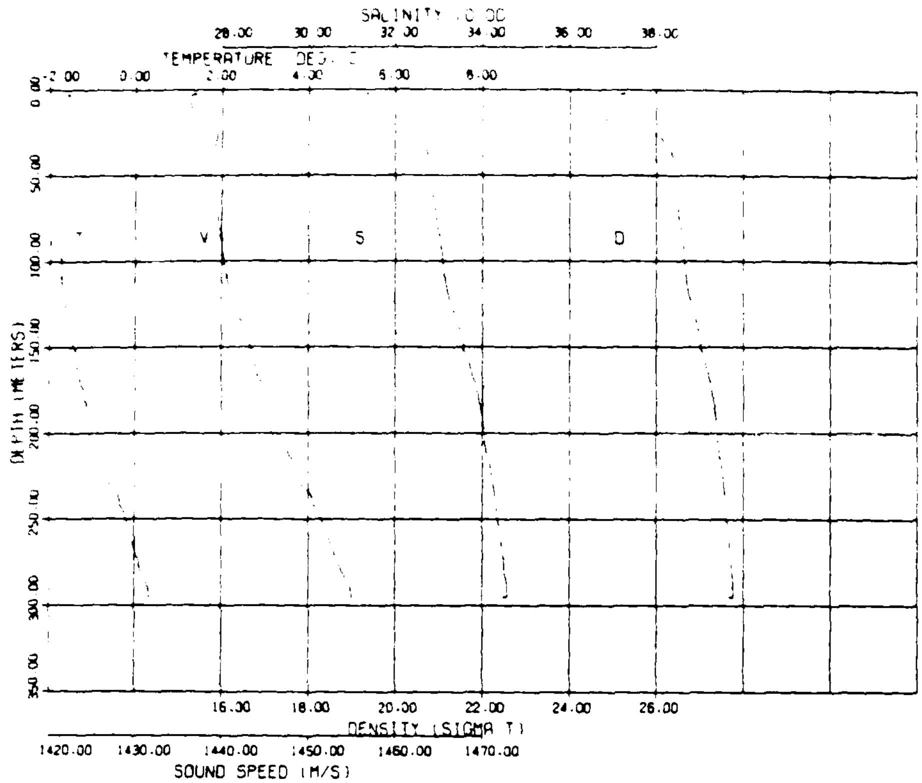

09/15/79 2100 STA 165 78-168N 17-007W BOTTOM 439
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

09/16/79 0015 STA 166 78-061N 17-160W BOTTOM 558

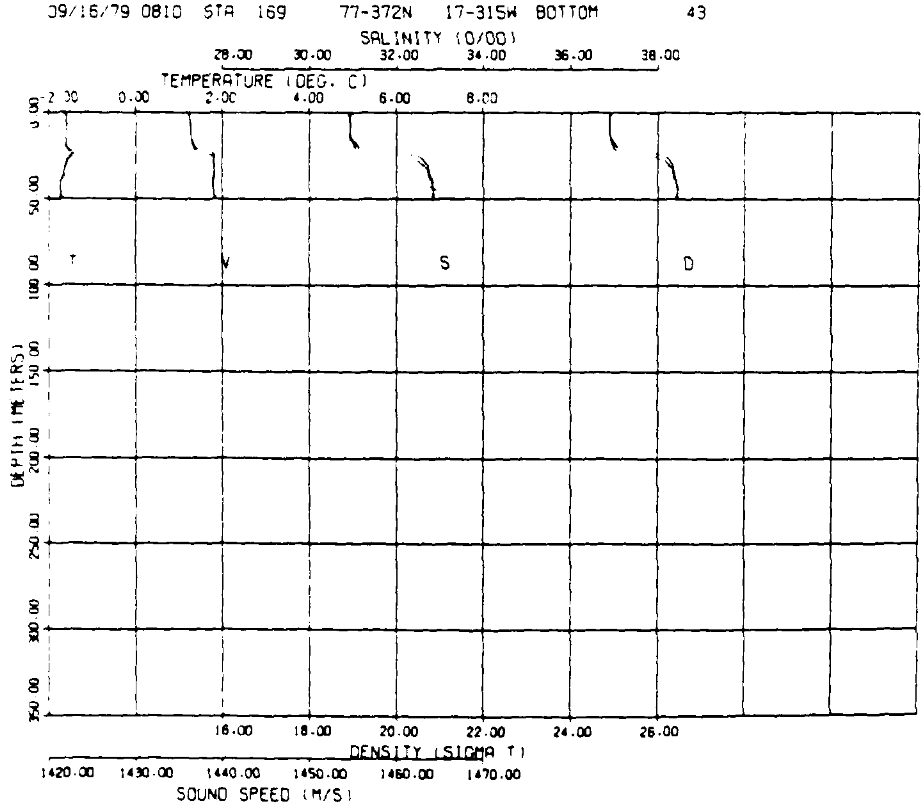


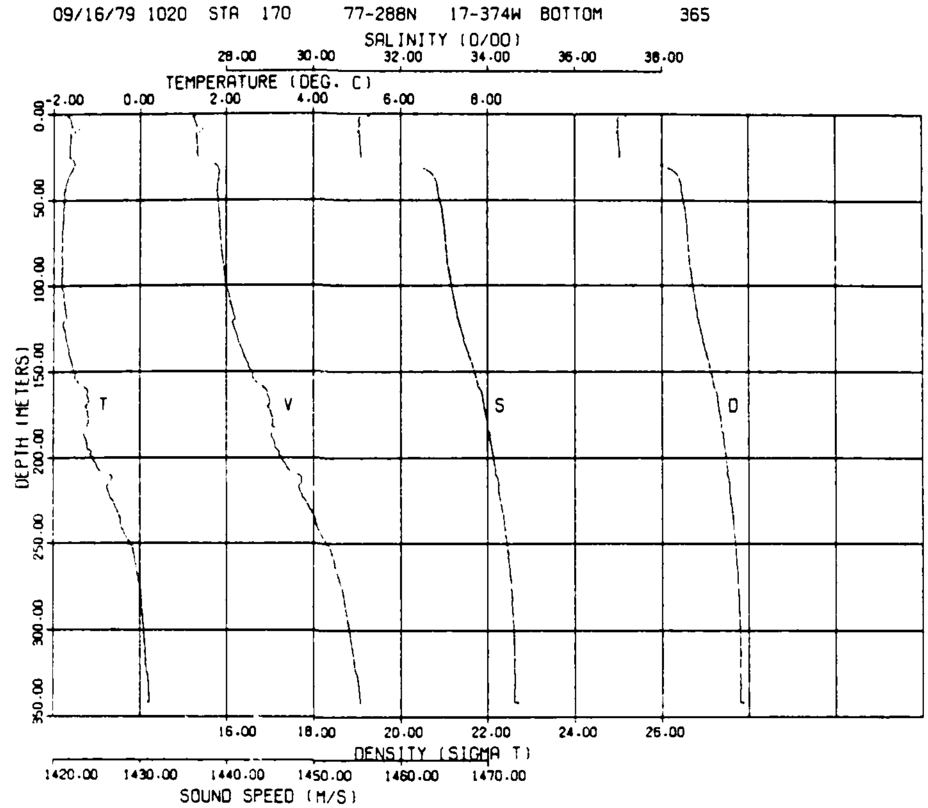


09/16/79 0545 STA 168 77-449N 16-210W BOTTOM 293

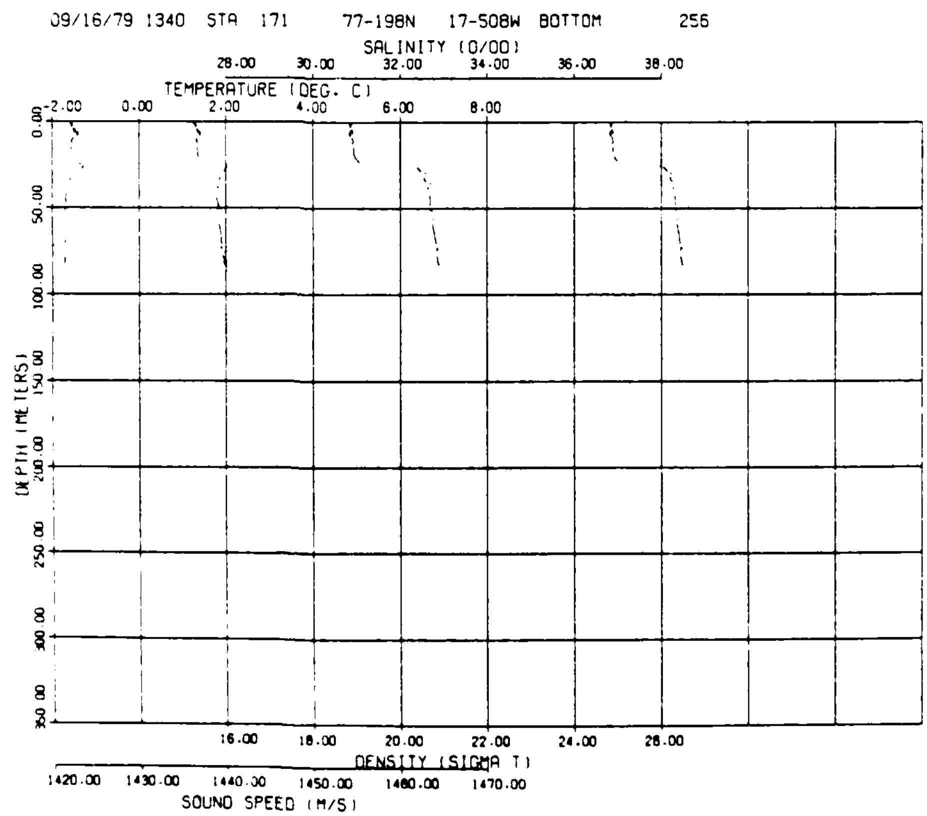


09/16/79 0810 STA 169 77-372N 17-315W BOTTOM 43



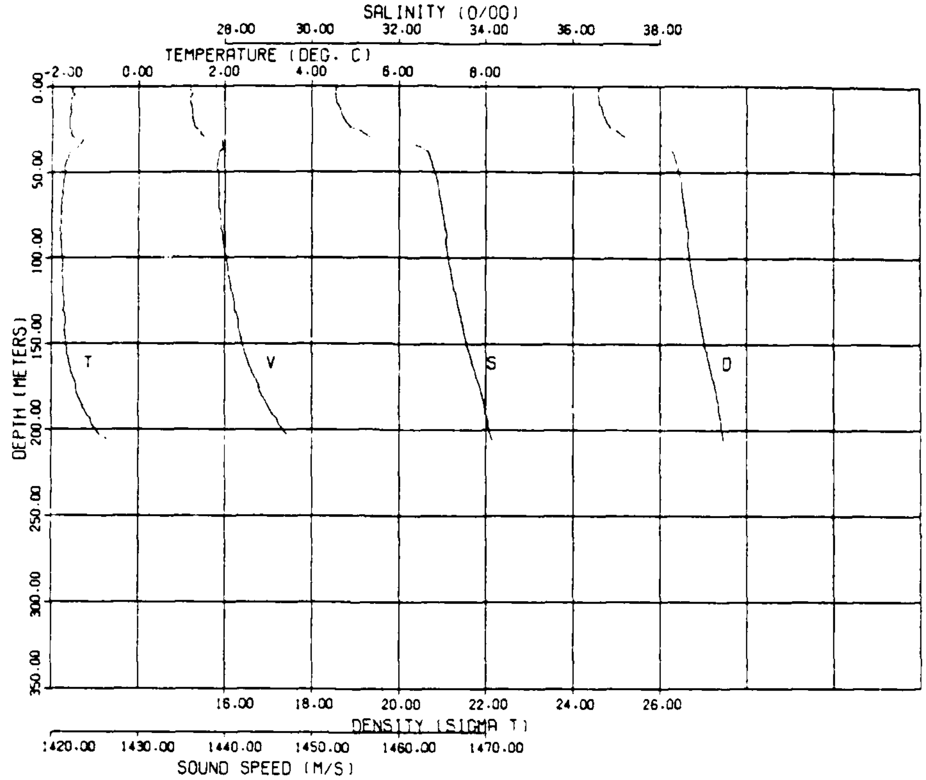


09/16/79 1020 STA 170 77-288N 17-374W BOTTOM 365
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

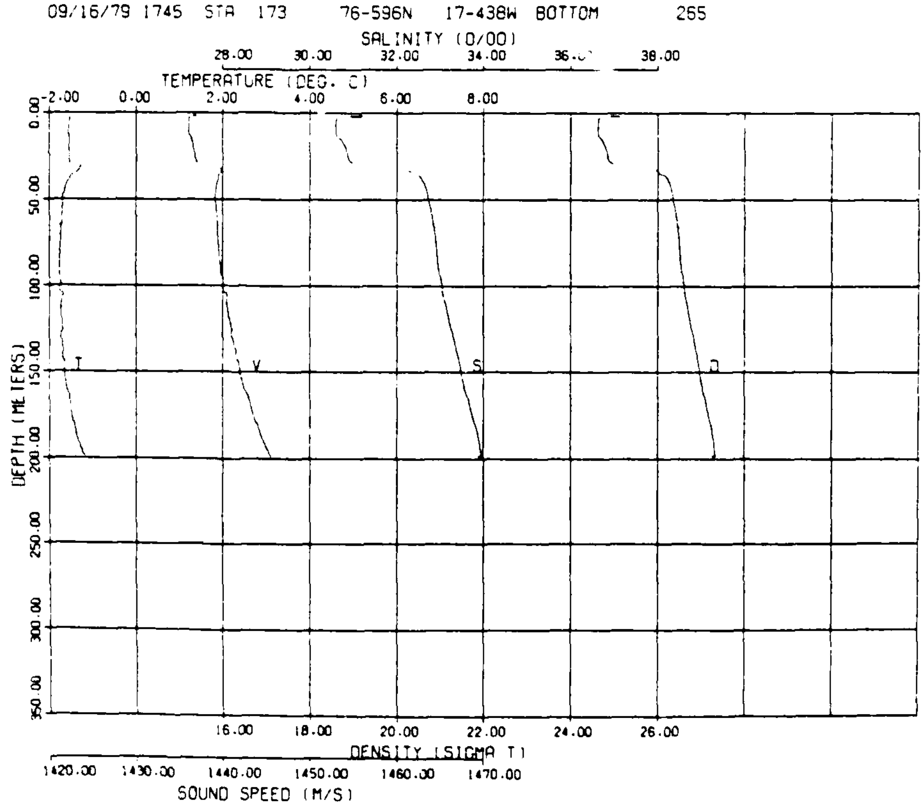


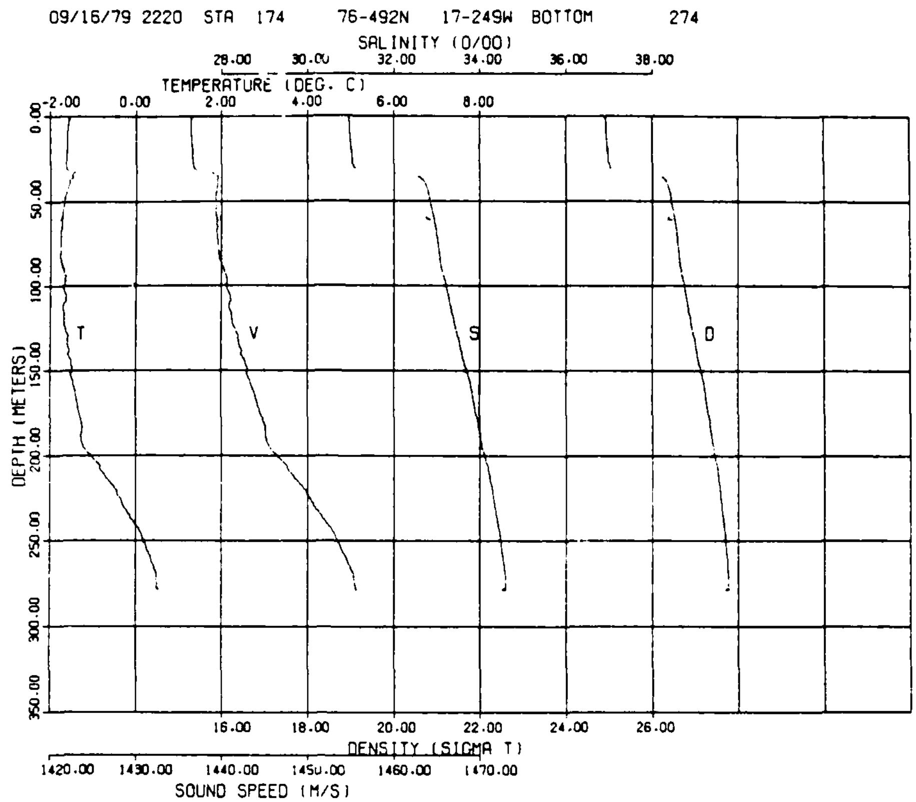
09/16/79 1340 STA 171 77-198N 17-508W BOTTOM 256
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

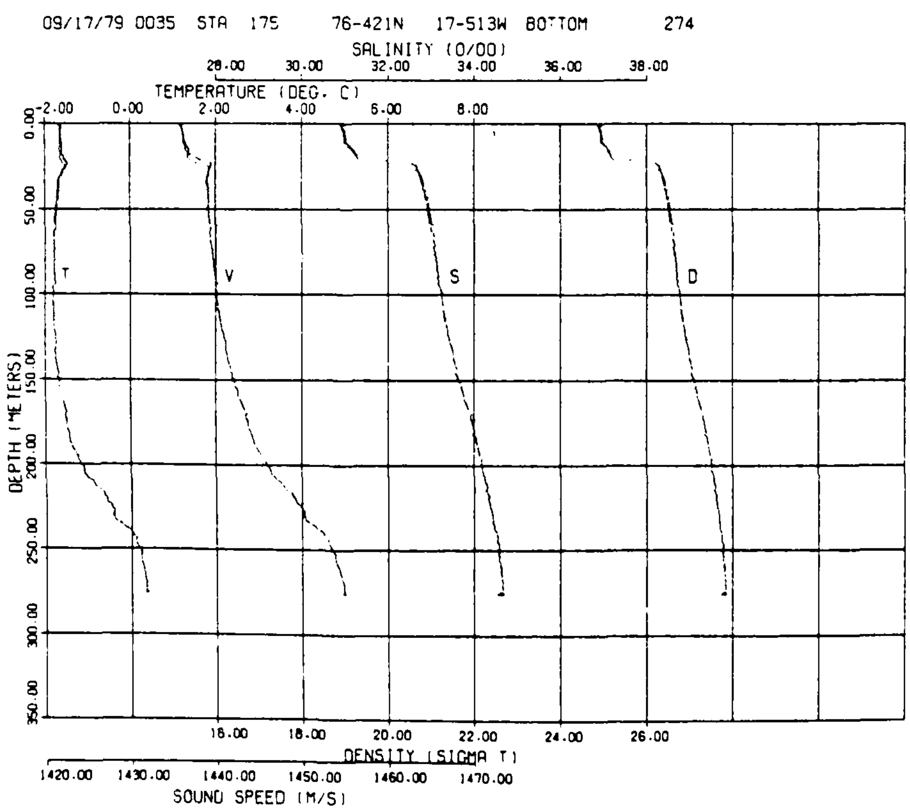
09/16/79 1520 STA 172 77-095N 17-364W BOTTOM 216

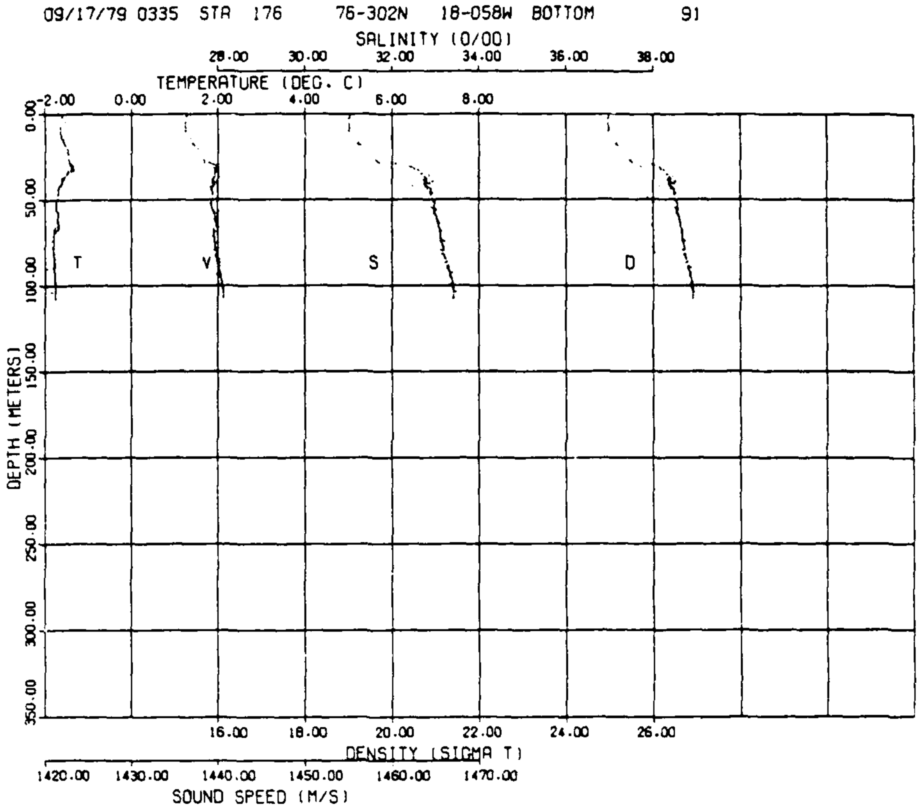


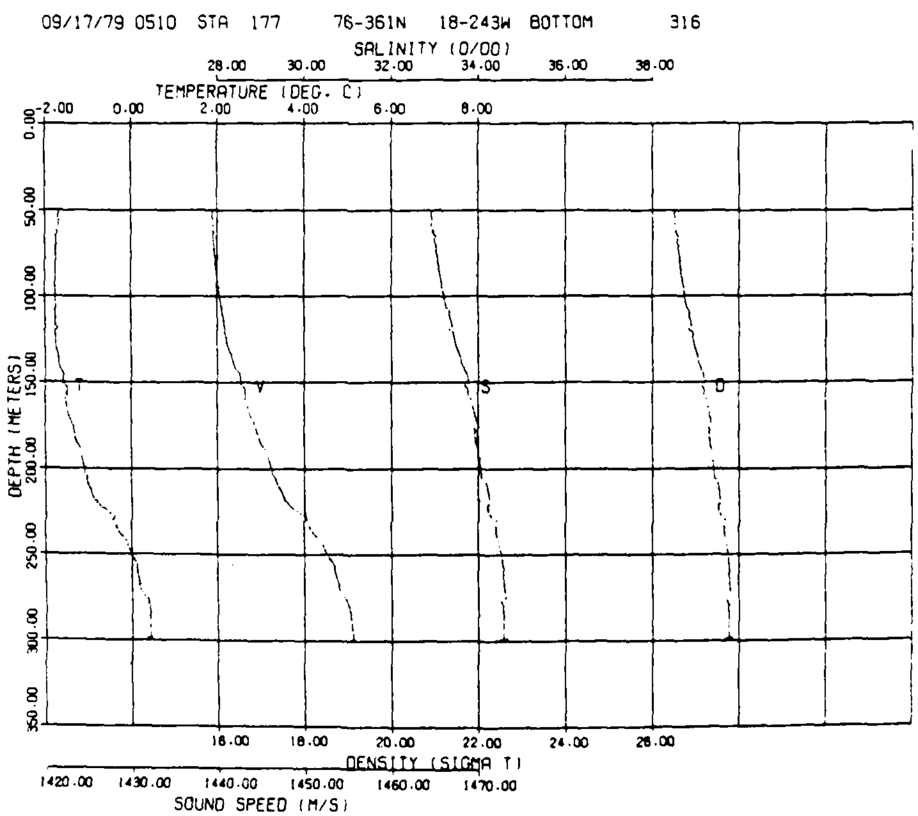
09/16/79 1745 STA 173 76-596N 17-438W BOTTOM 265

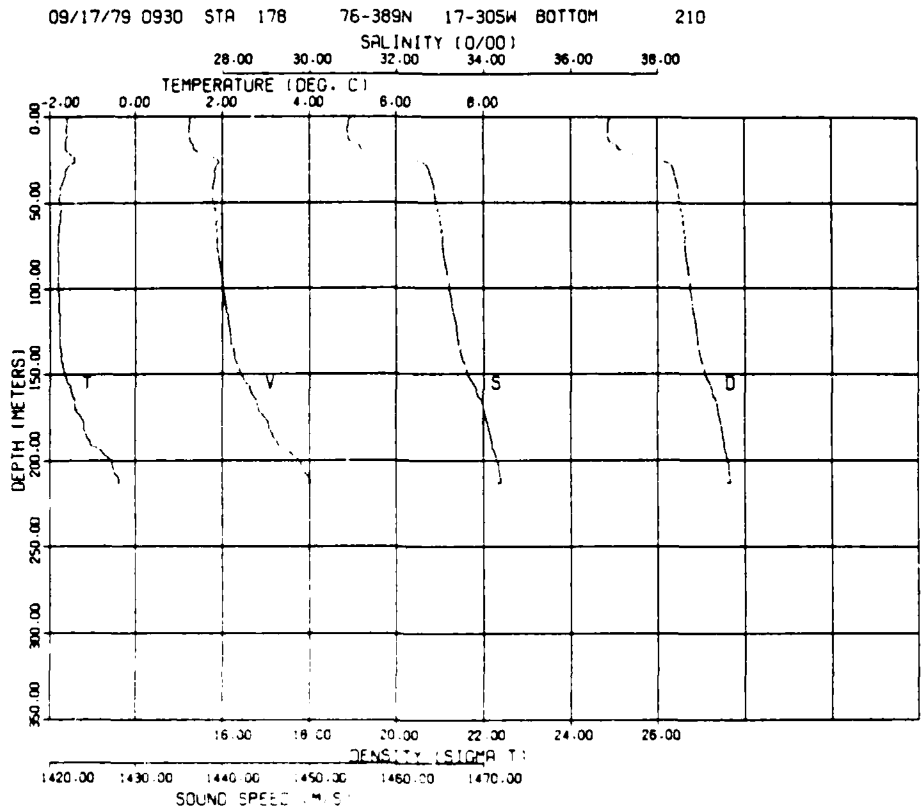



09/16/79 2220 STA 174 76-492N 17-249W BOTTOM 274
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

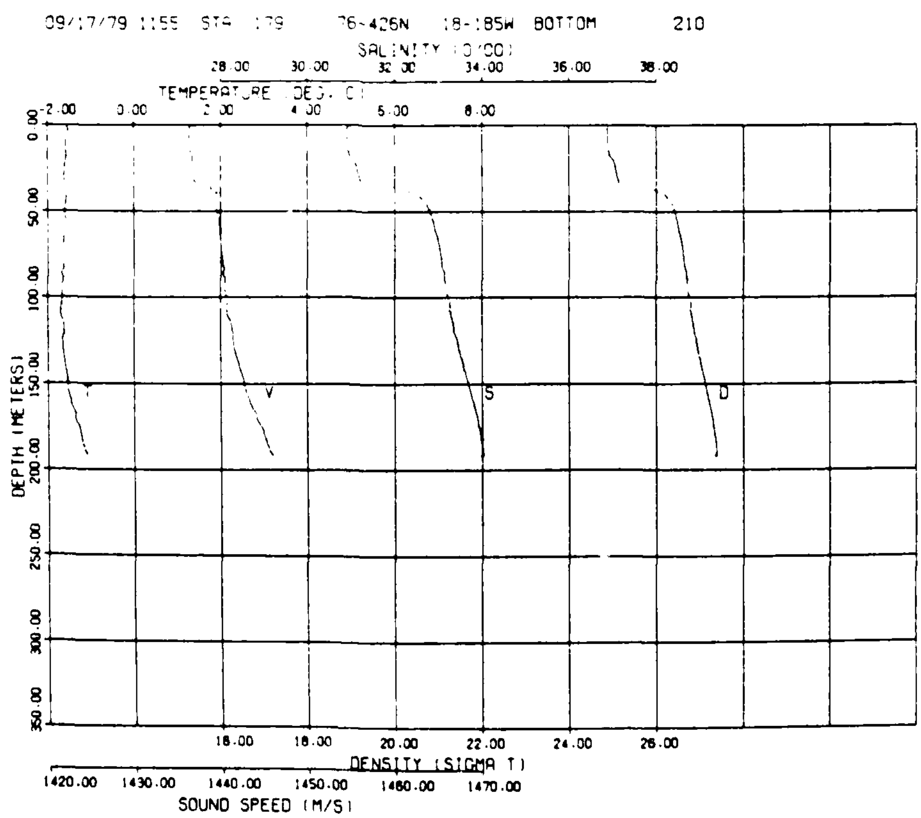

09/17/79 0035 STA 175 76-421N 17-513W BOTTOM 274
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/17/79 0335 STA 176 76-302N 18-058W BOTTOM 91
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

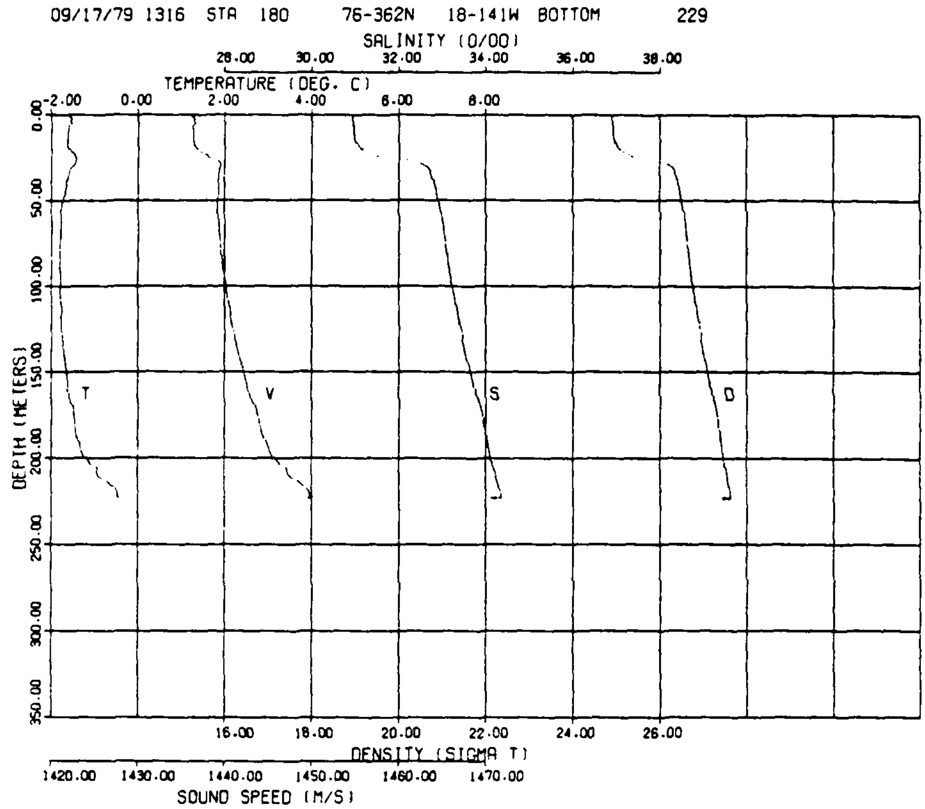

09/17/79 0510 STA 177 76-361N 18-243W BOTTOM 316
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

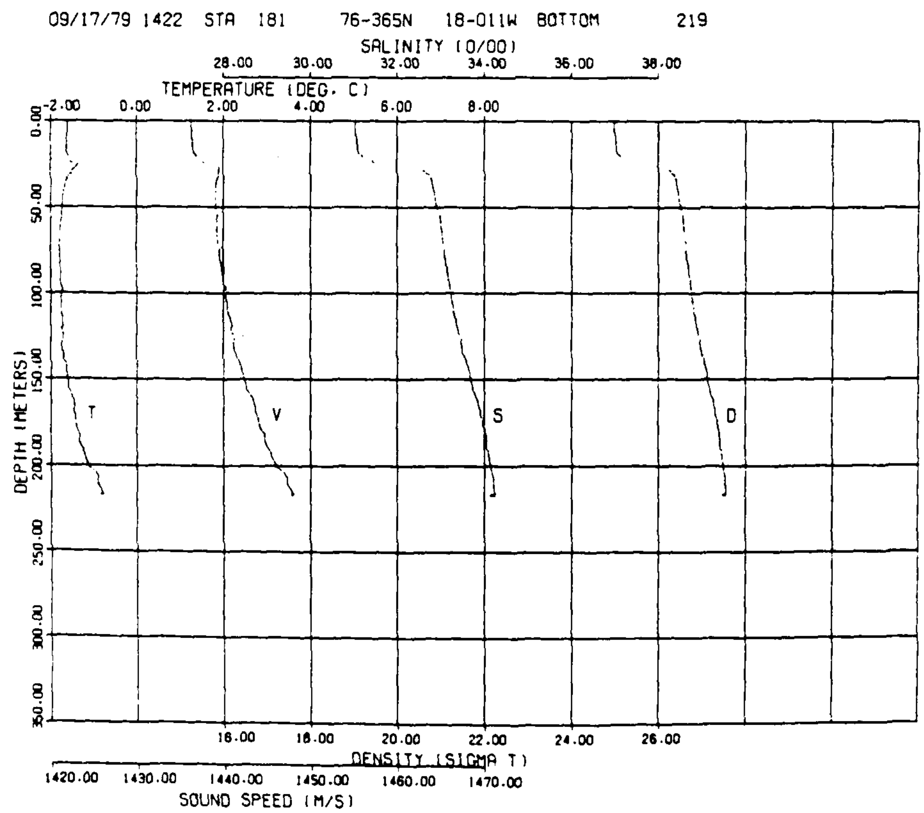


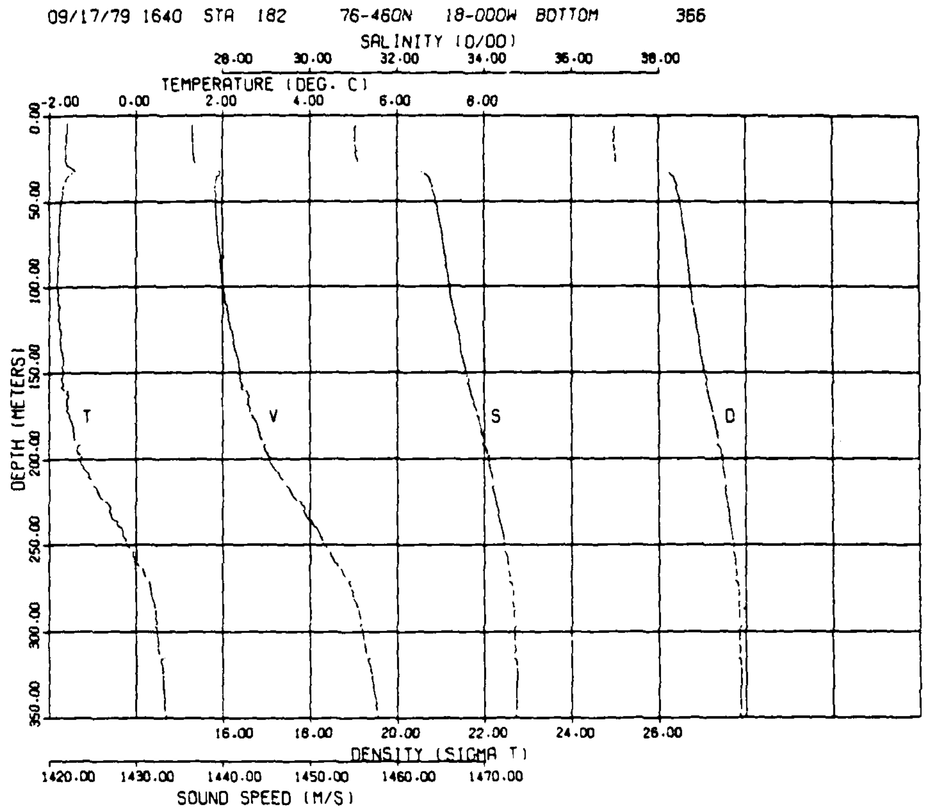
09/17/79 0930 STA 178 76-389N 17-305W BOTTOM 210
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

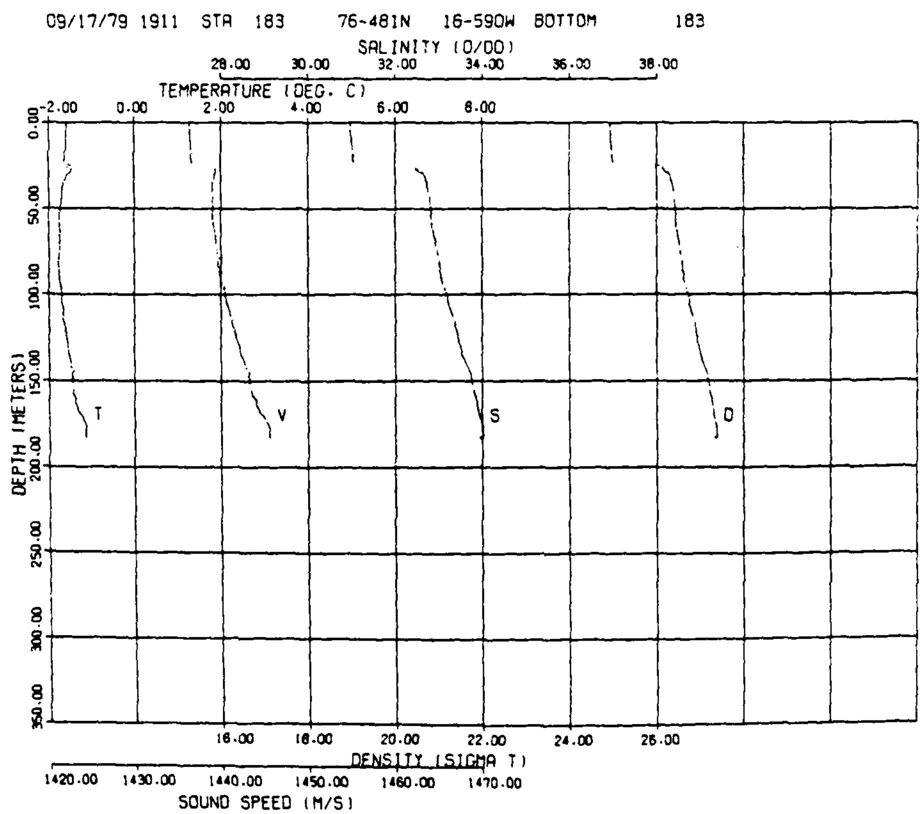


09/17/79 1155 STA 179 76-426N 18-185W BOTTOM 210
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

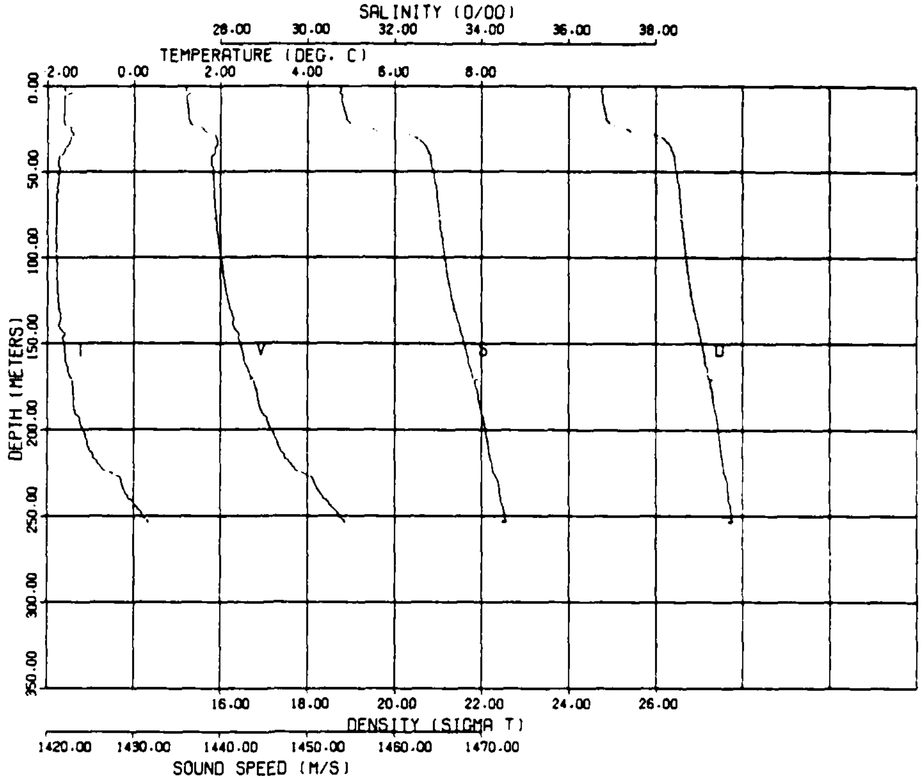

09/17/79 1316 STA 180 76-362N 18-141W BOTTOM 229
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/17/79 1422 STA 181 76-365N 18-011W BOTTOM 219
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

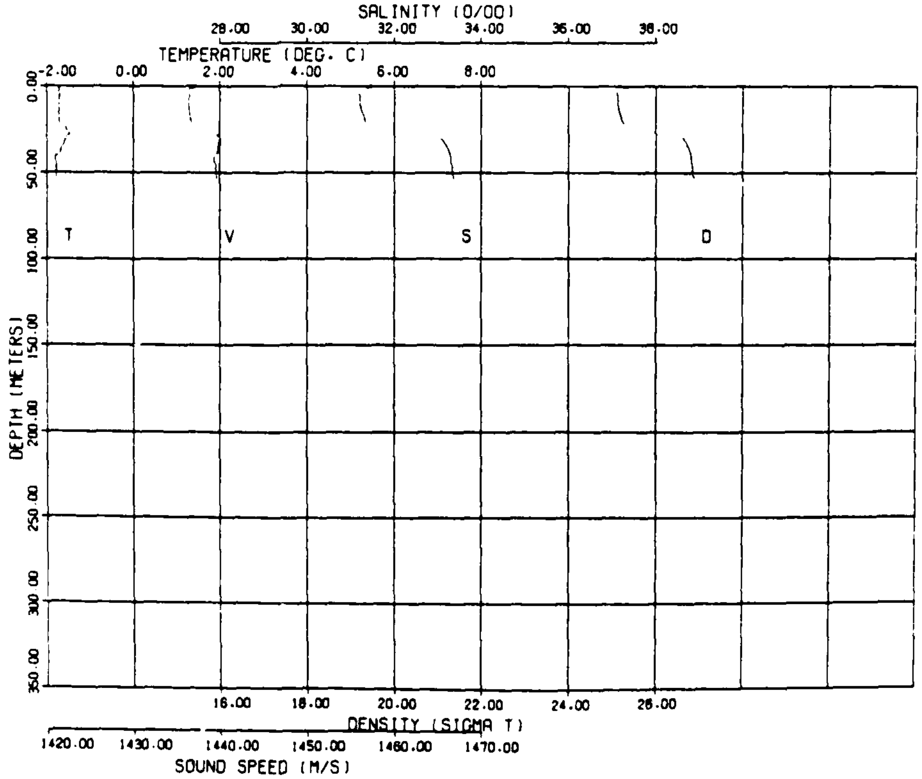

09/17/79 1640 STA 182 76-460N 18-000W BOTTOM 366
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

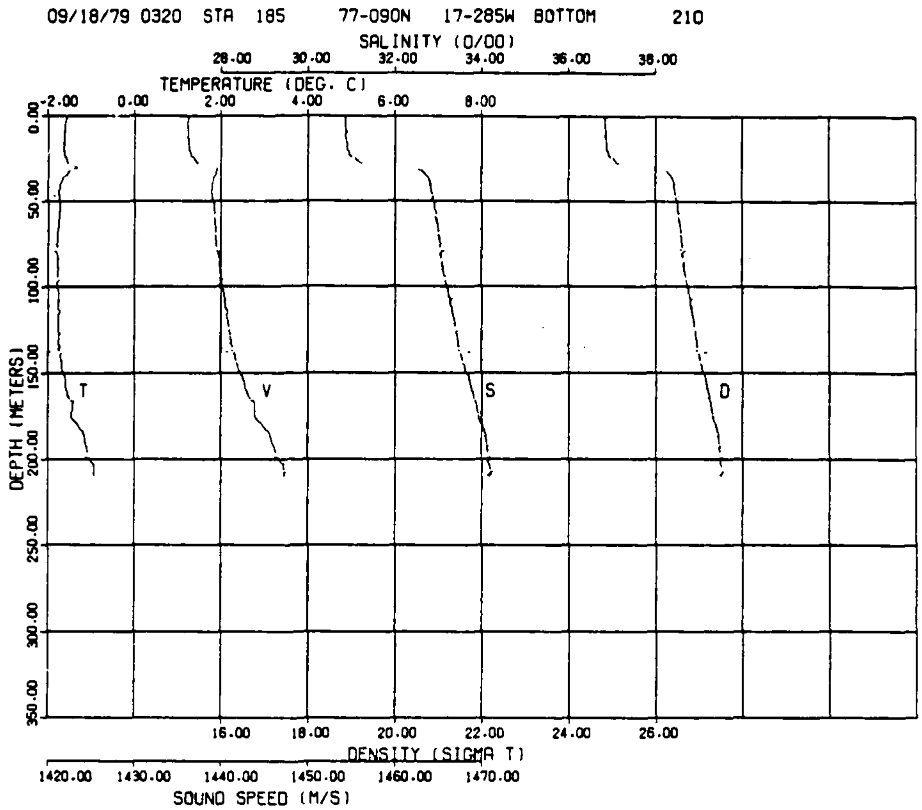

09/17/79 1911 STA 183 76-481N 16-590W BOTTOM 183
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

09/17/79 2150 STA 184A 76-568N 17-388W BOTTOM 265

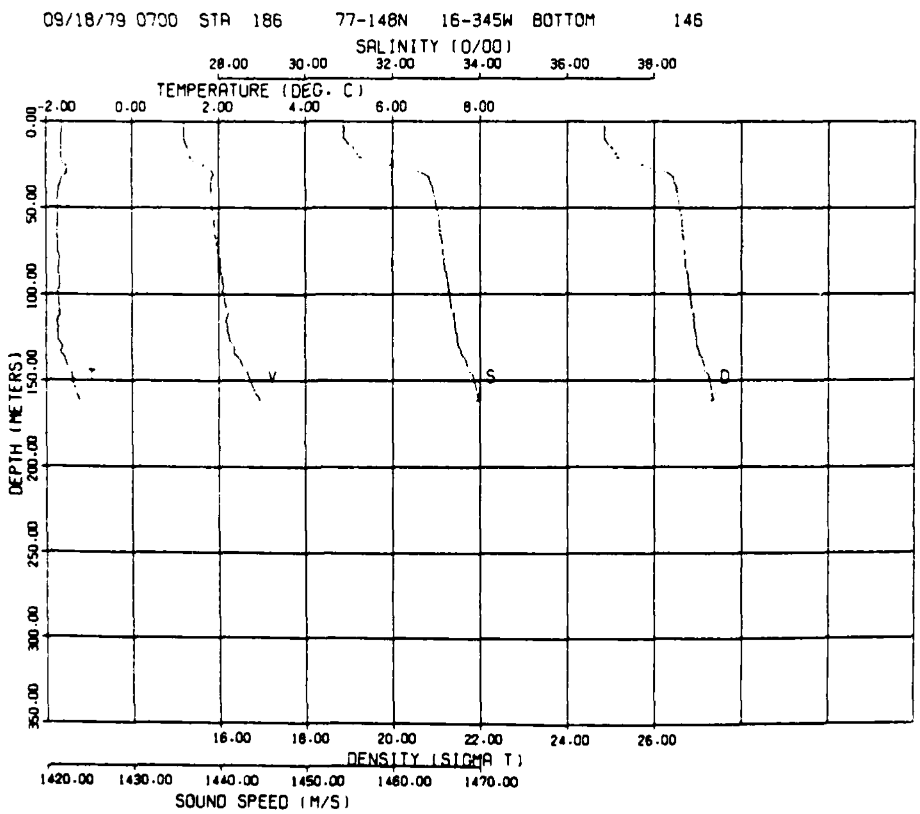


09/17/79 2200 STA 184B 76-568N 17-388W BOTTOM 265



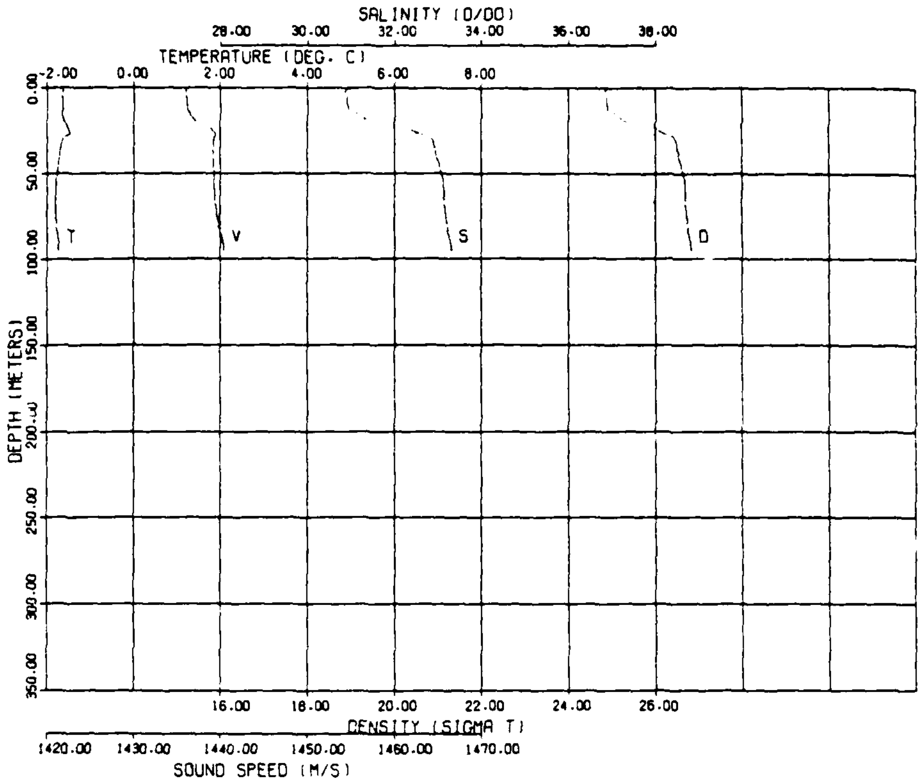


09/18/79 0320 STA 185 77-090N 17-285W BOTTOM 210
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

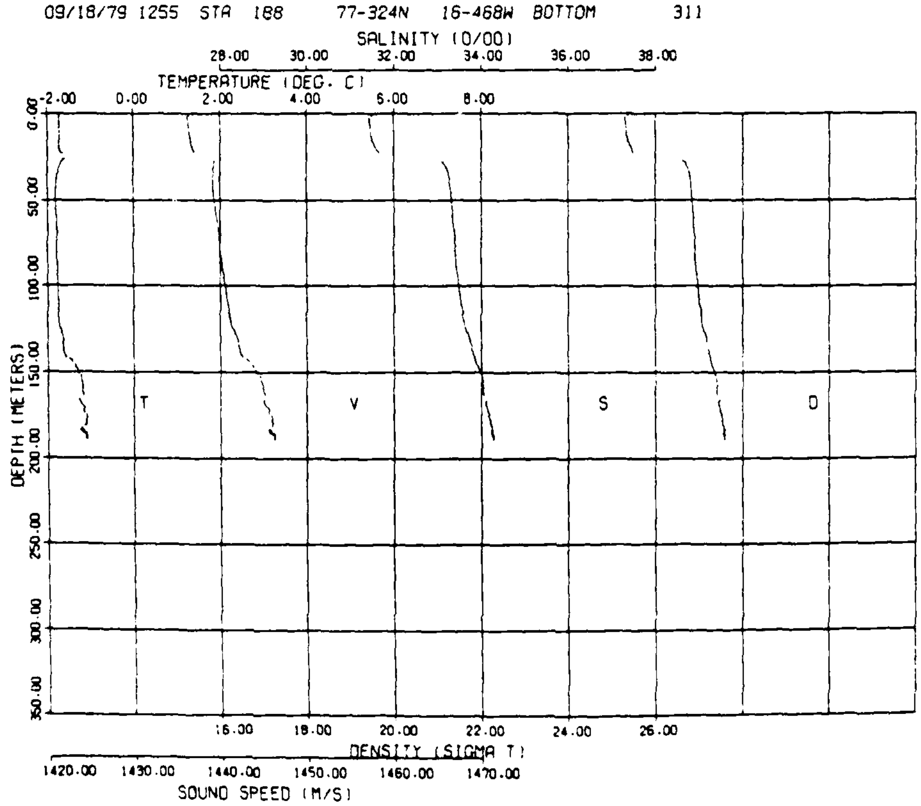


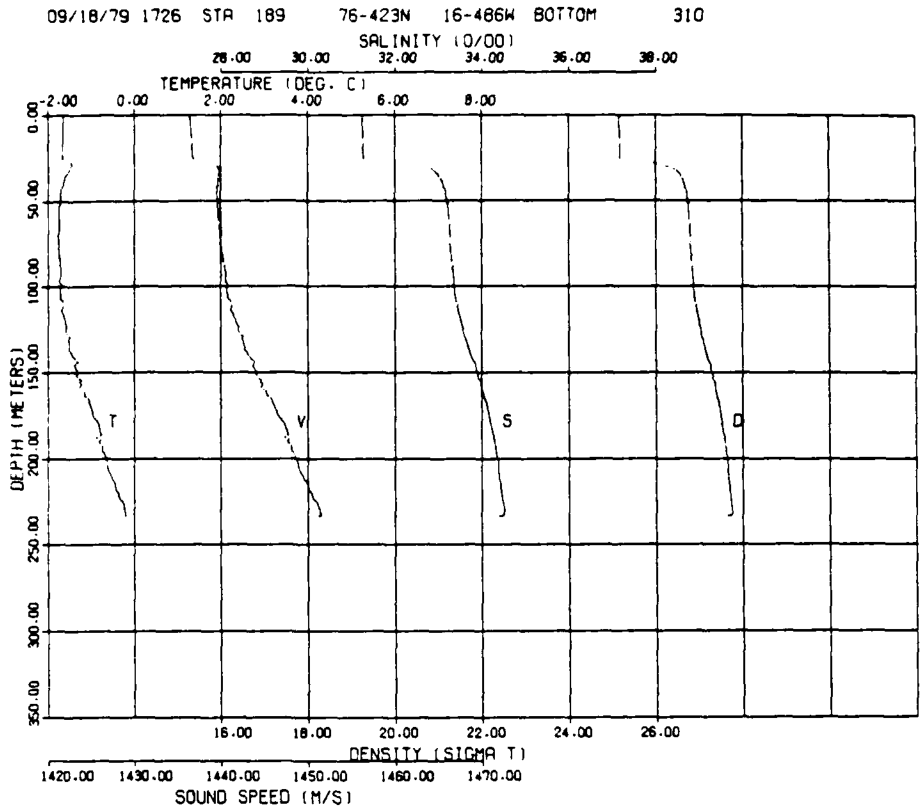
09/18/79 0700 STA 186 77-148N 16-345W BOTTOM 146
SALINITY (O/OO)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

09/18/79 0850 STA 187 77-266N 16-344W BOTTOM 90

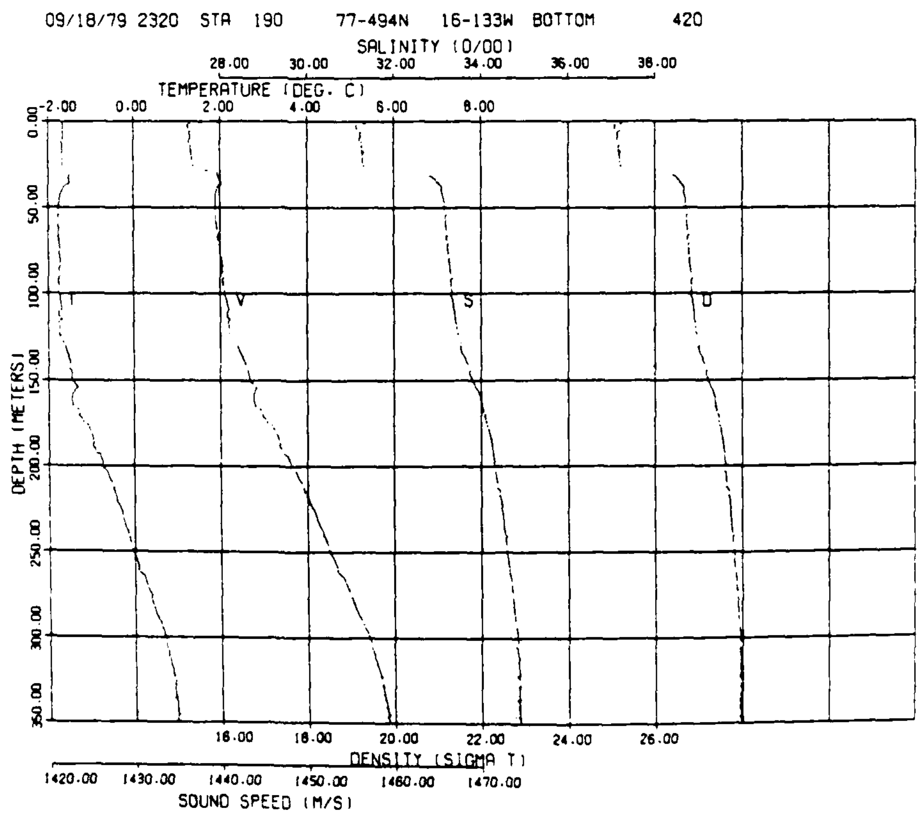


09/18/79 1255 STA 188 77-324N 16-468W BOTTOM 311



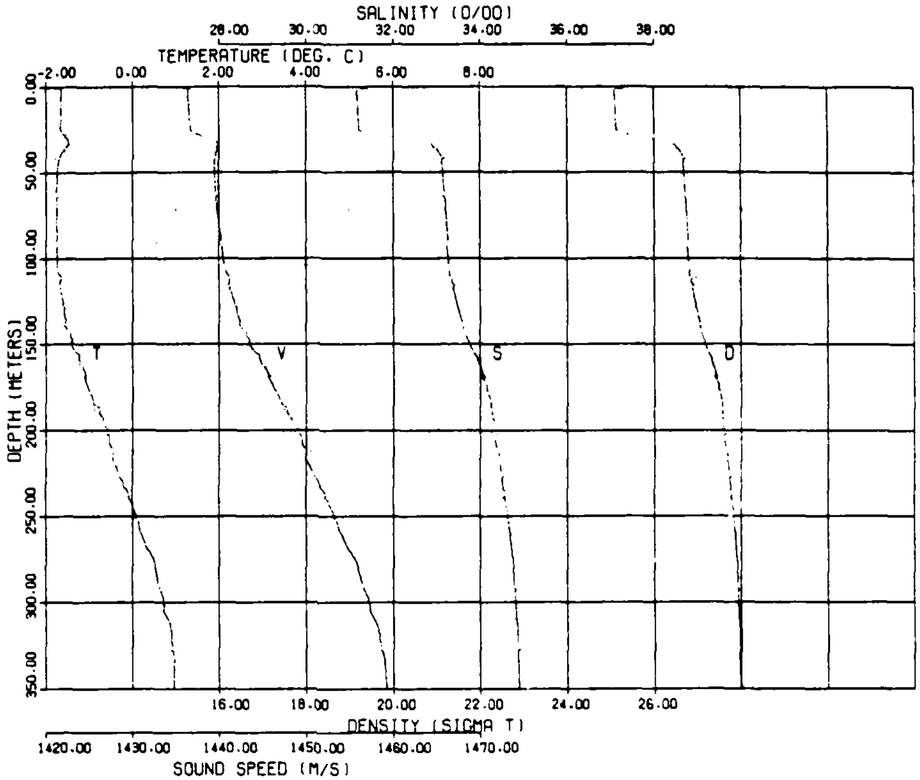


09/18/79 1726 STA 189 76-423N 16-486W BOTTOM 310
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

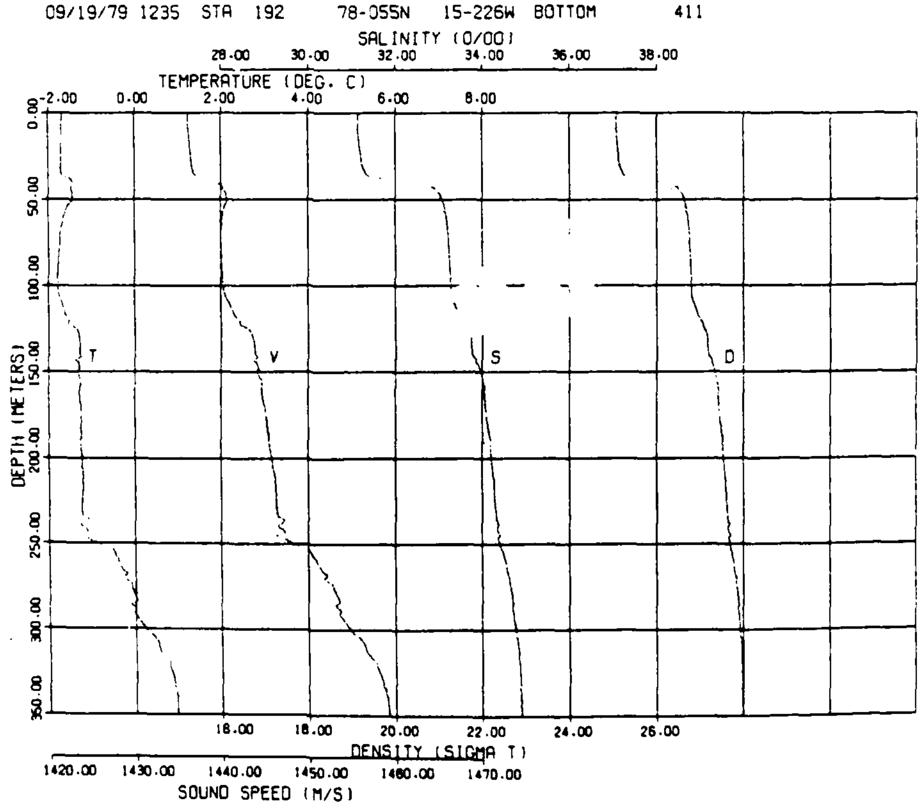


09/18/79 2320 STA 190 77-494N 16-133W BOTTOM 420
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

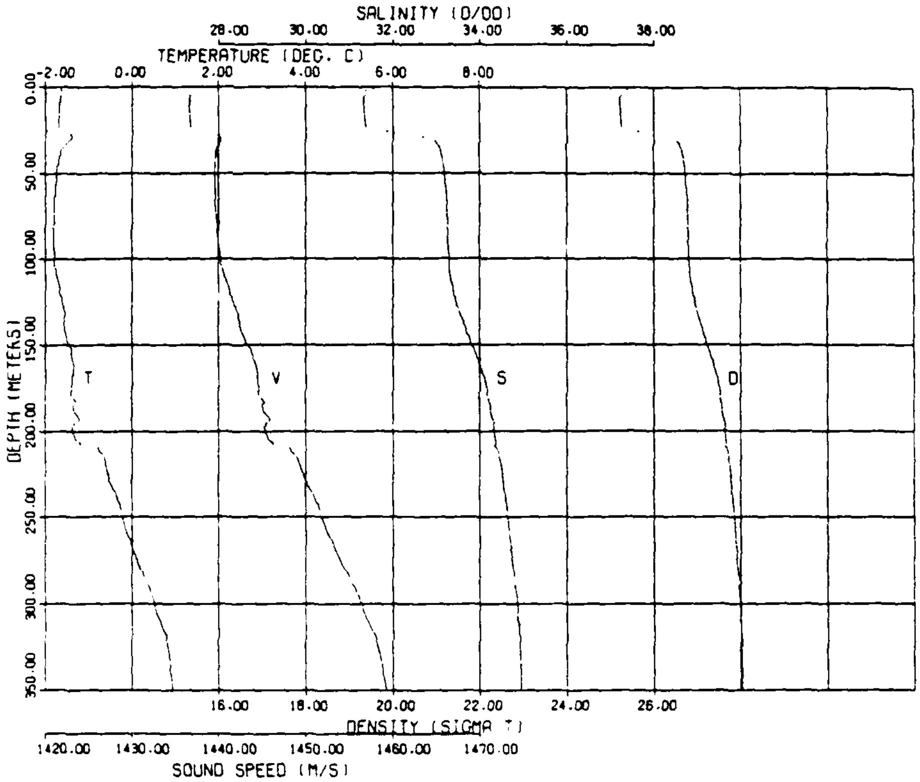
09/19/79 0300 STA 191 77-572N 15-442W BOTTOM 500



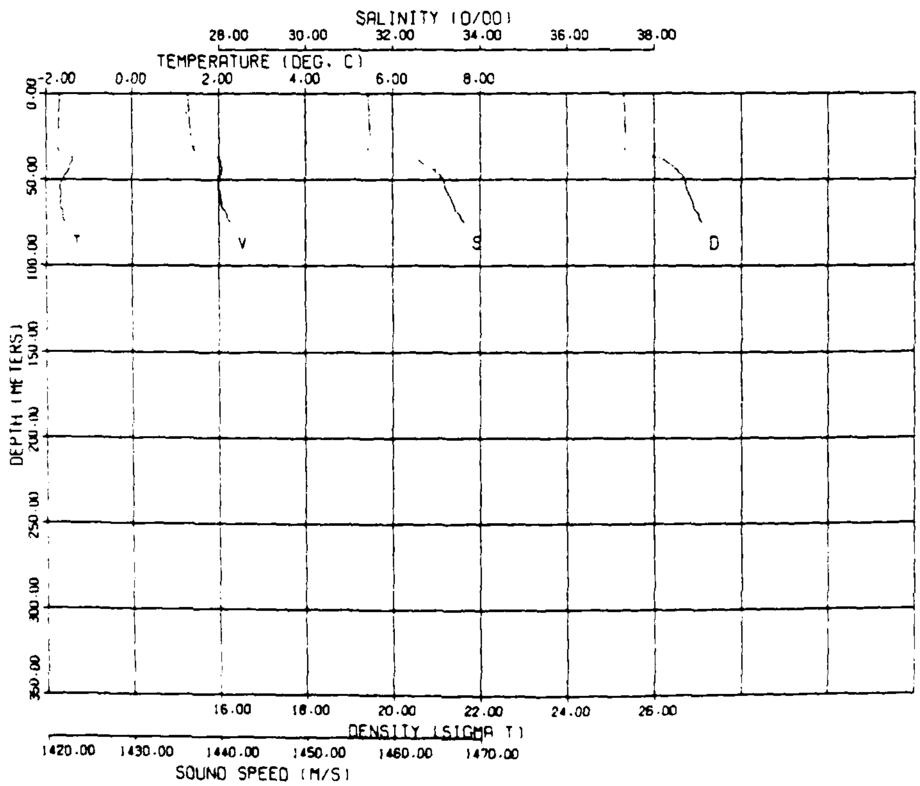
09/19/79 1235 STA 192 78-055N 15-226W BOTTOM 411

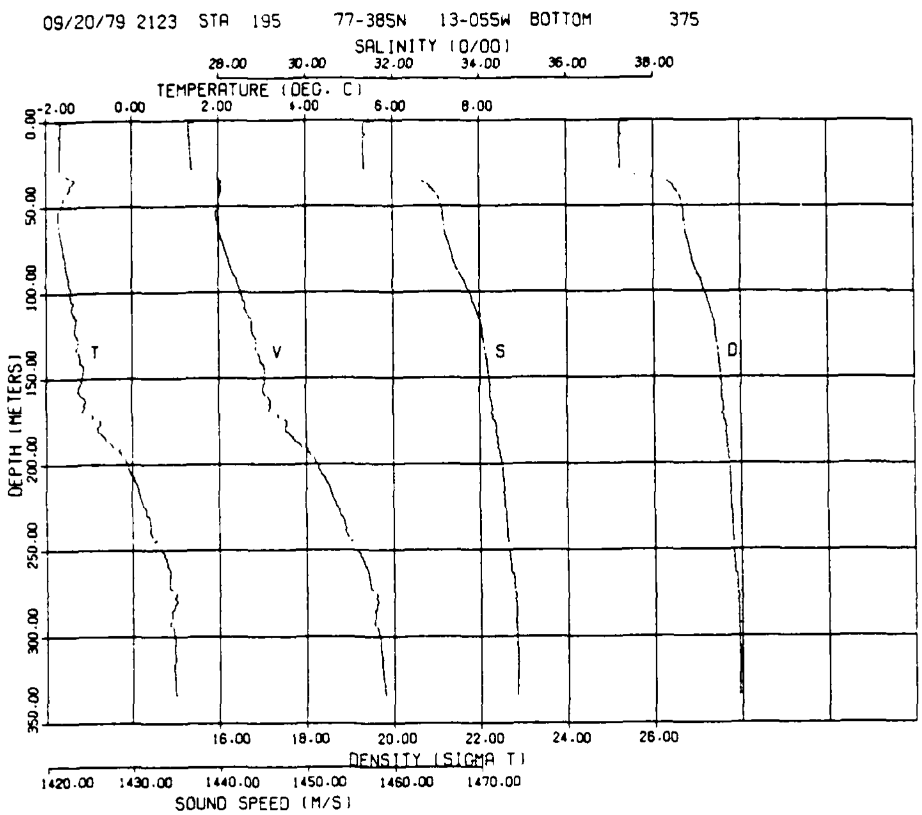


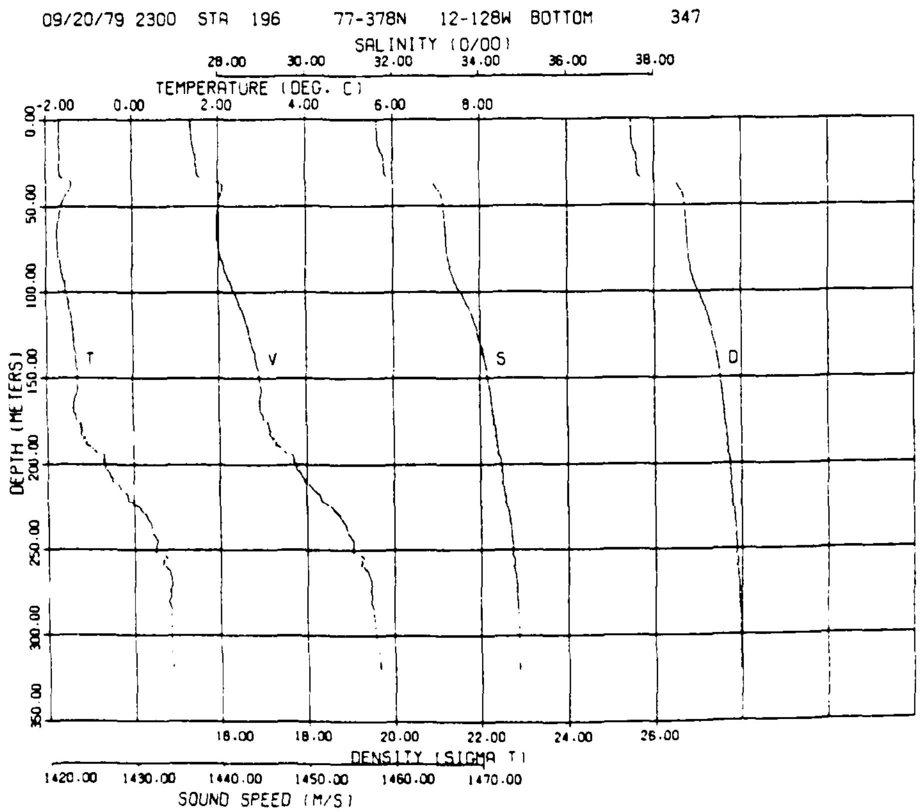
09/20/79 1545 STA 193 77-504N 15-059W BOTTOM 457

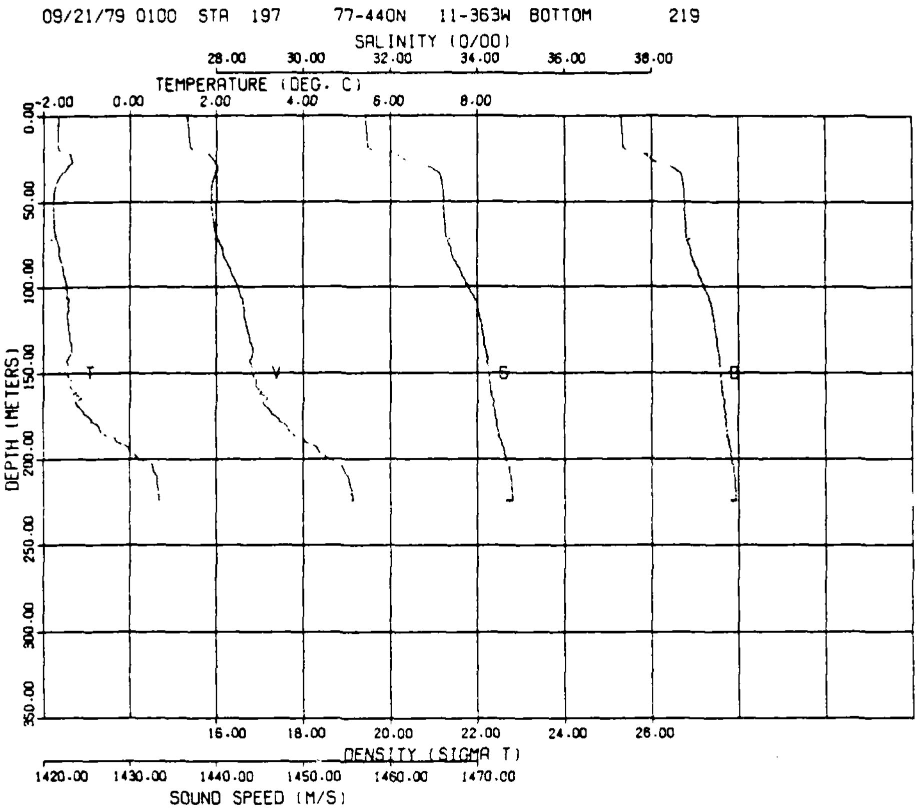


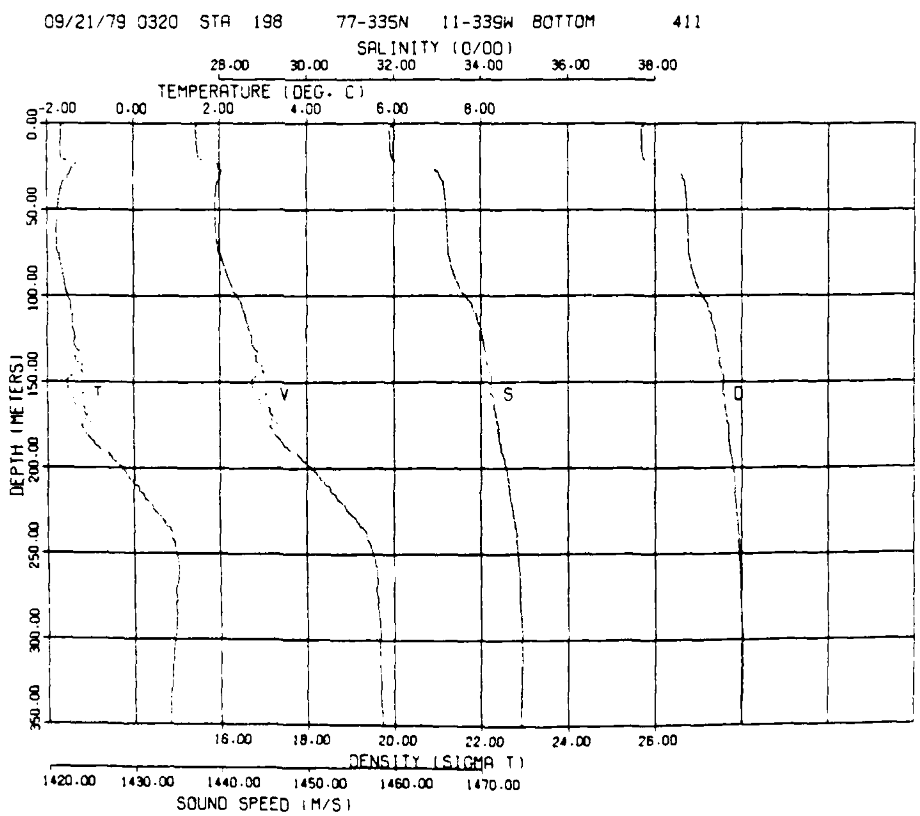
09/2C/79 1955 STA 194 77-432N 13-525W BOTTOM 366



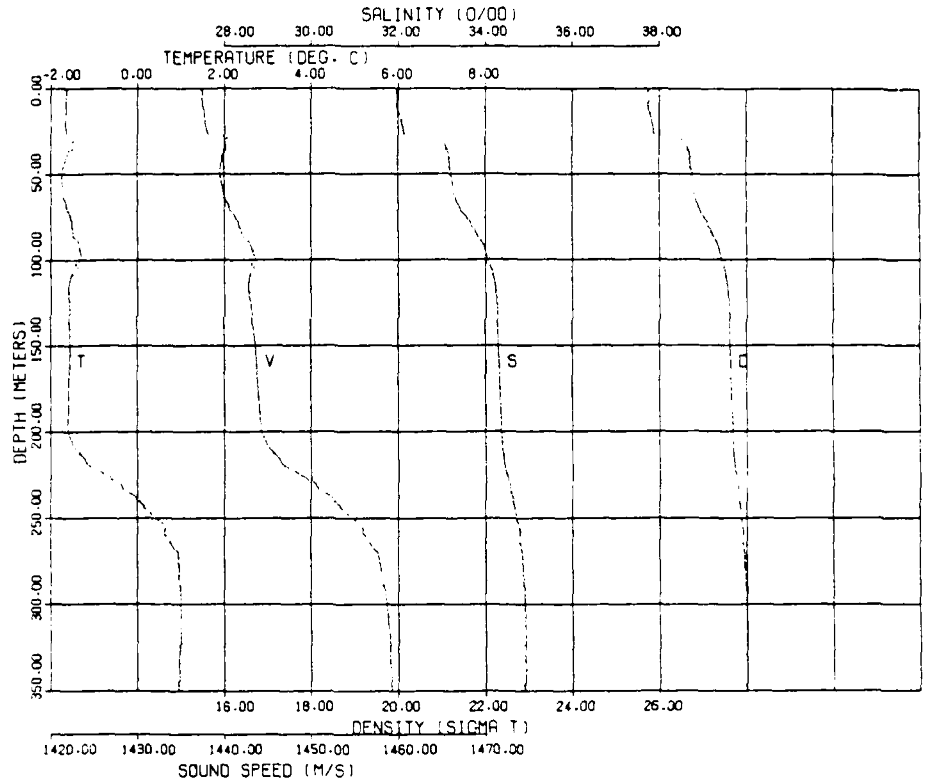

09/20/79 2123 STA 195 77-385N 13-055W BOTTOM 375
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/20/79 2300 STA 196 77-378N 12-128W BOTTOM 347
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

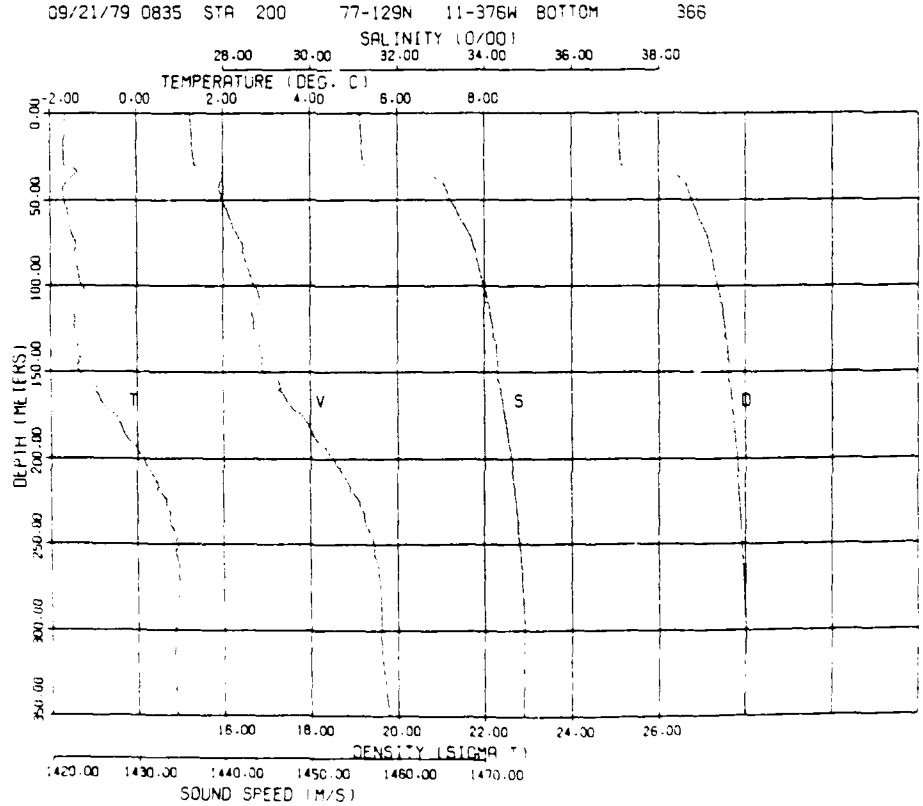

09/21/79 0100 STA 197 77-440N 11-363W BOTTOM 219
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/21/79 0320 STA 198 77-335N 11-339W BOTTOM 411
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

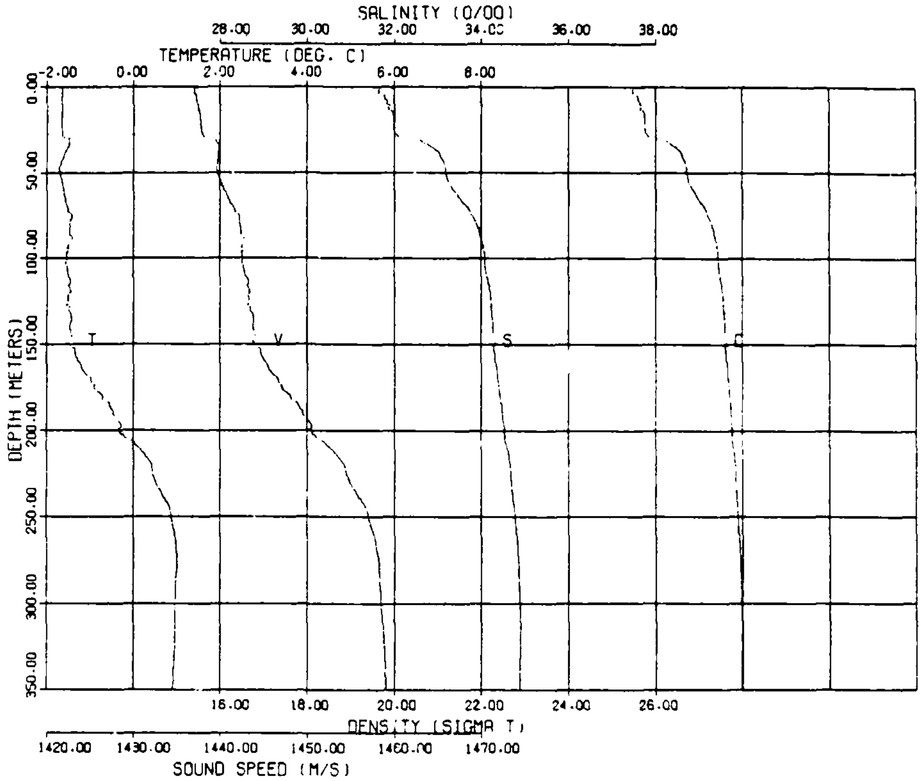
09/21/79 0605 STA 199 77-233N 11-186W BOTTOM 439



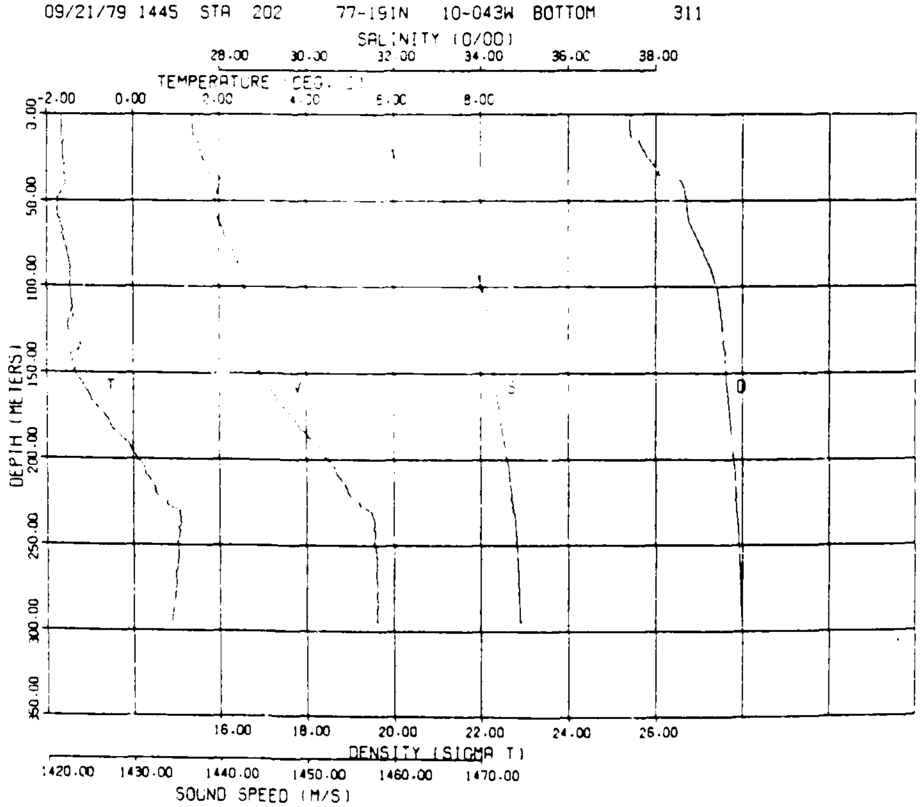
09/21/79 0835 STA 200 77-129N 11-376W BOTTOM 366

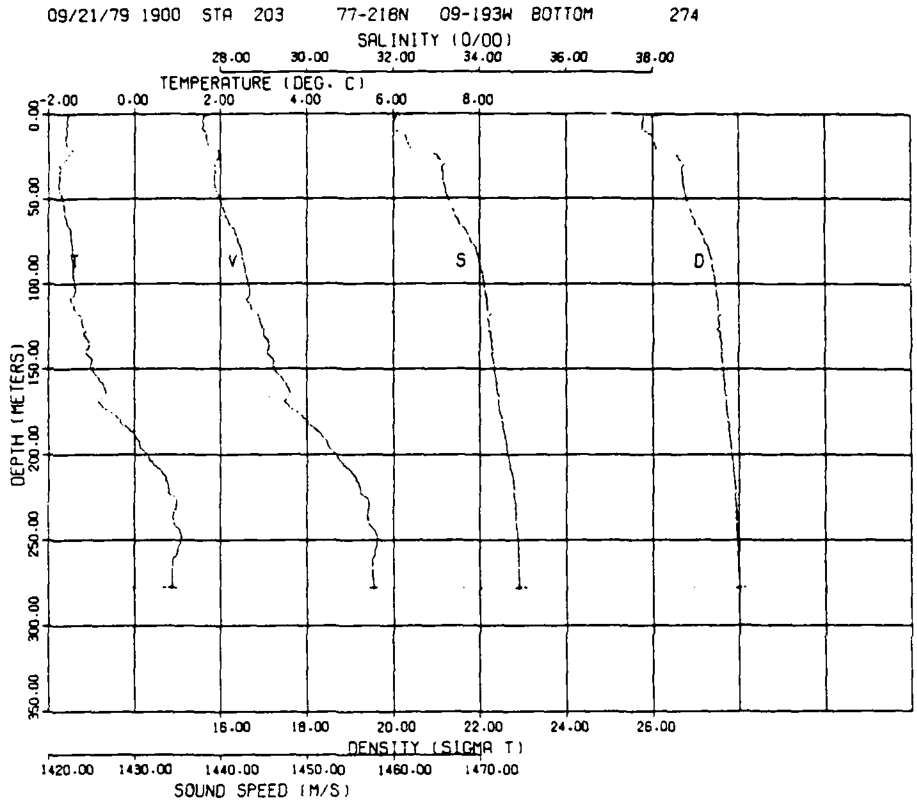


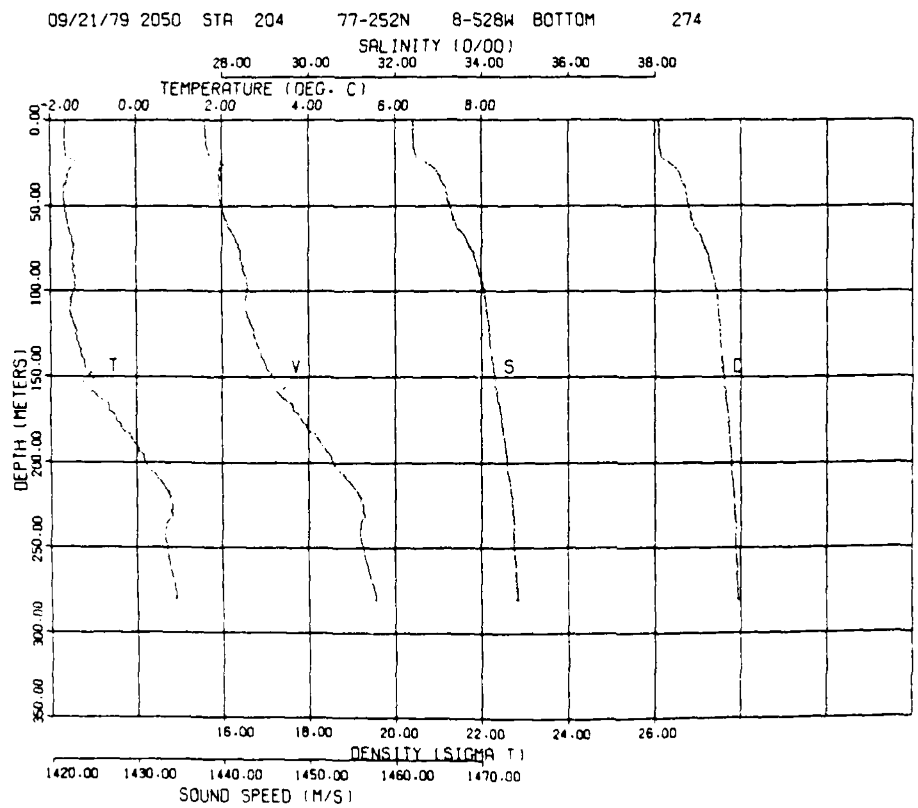
09/21/79 1139 STA 201 77-149N 10-424W BOTTOM 457



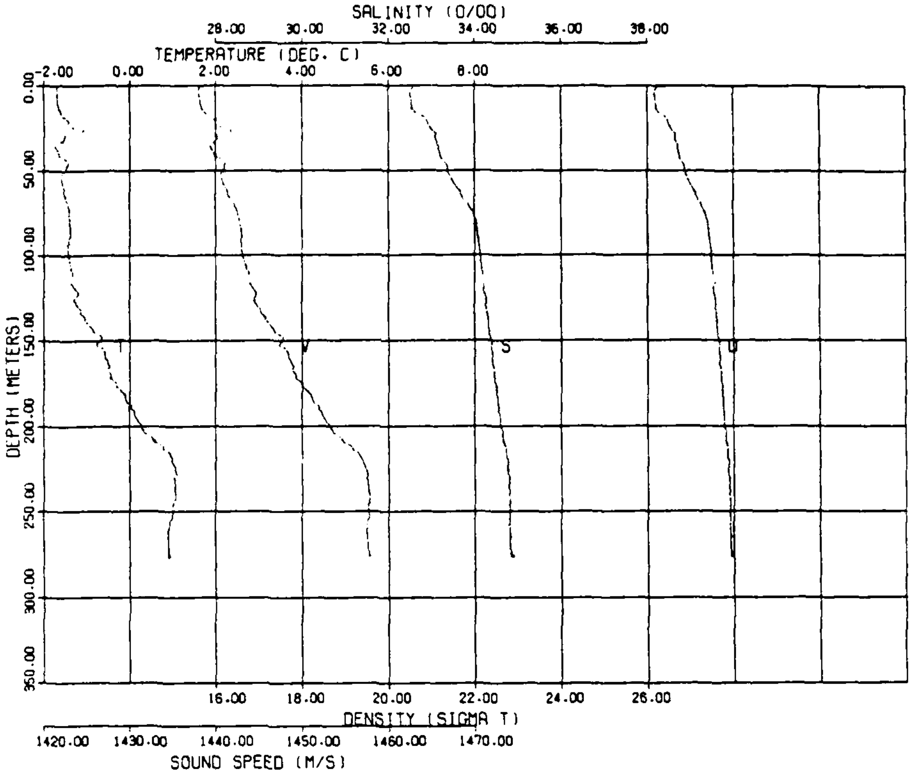
09/21/79 1445 STA 202 77-191N 10-043W BOTTOM 311



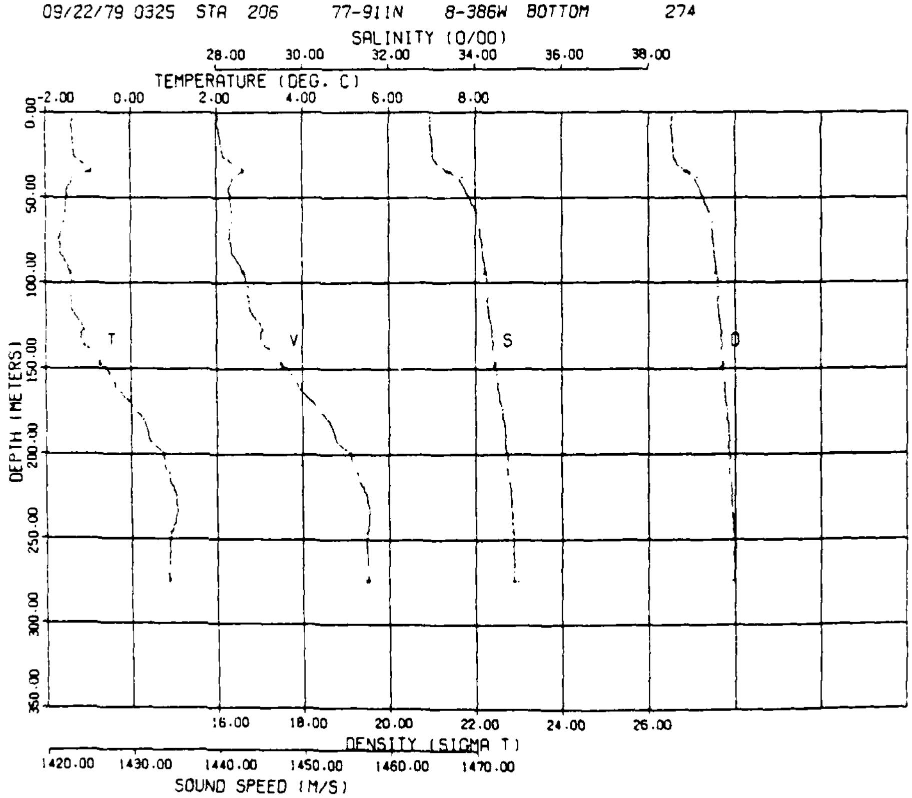

09/21/79 1900 STA 203 77-218N 09-193W BOTTOM 274
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

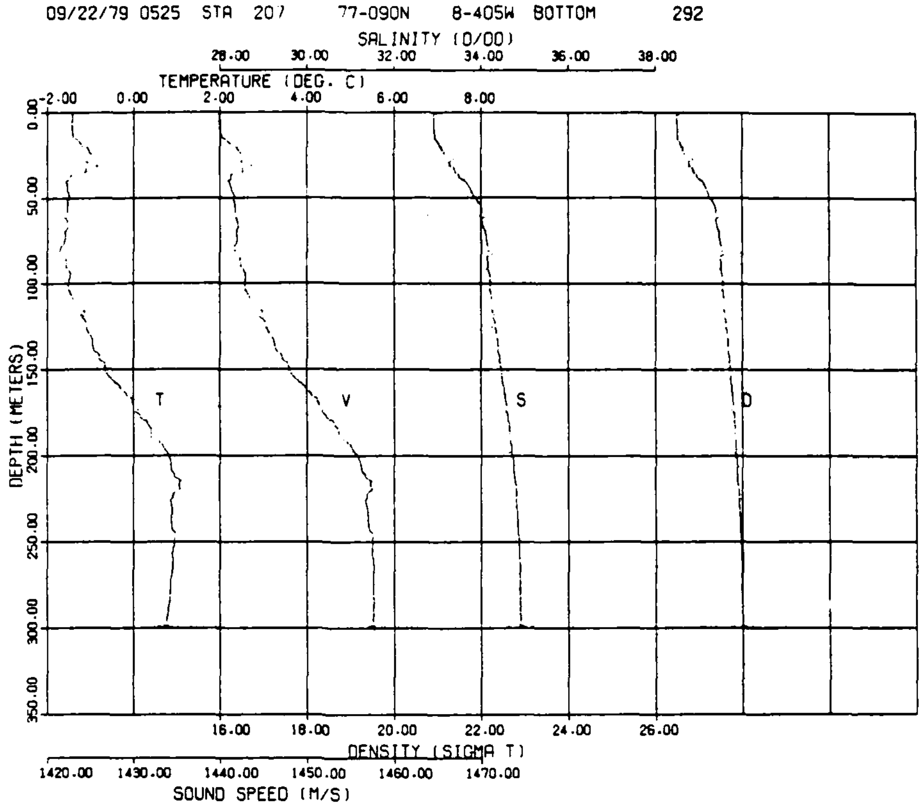

09/21/79 2050 STA 204 77-252N 8-528W BOTTOM 274
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
DEPTH (METERS)
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

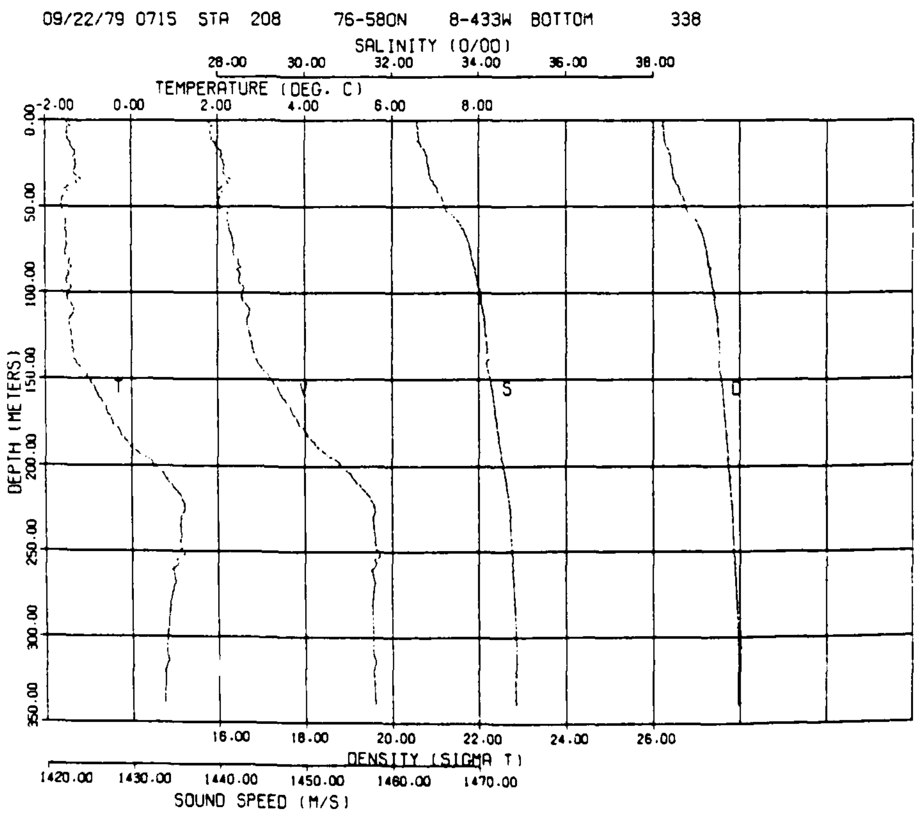
09/21/79 2245 STA 205 77-299N 8-320W BOTTOM 273



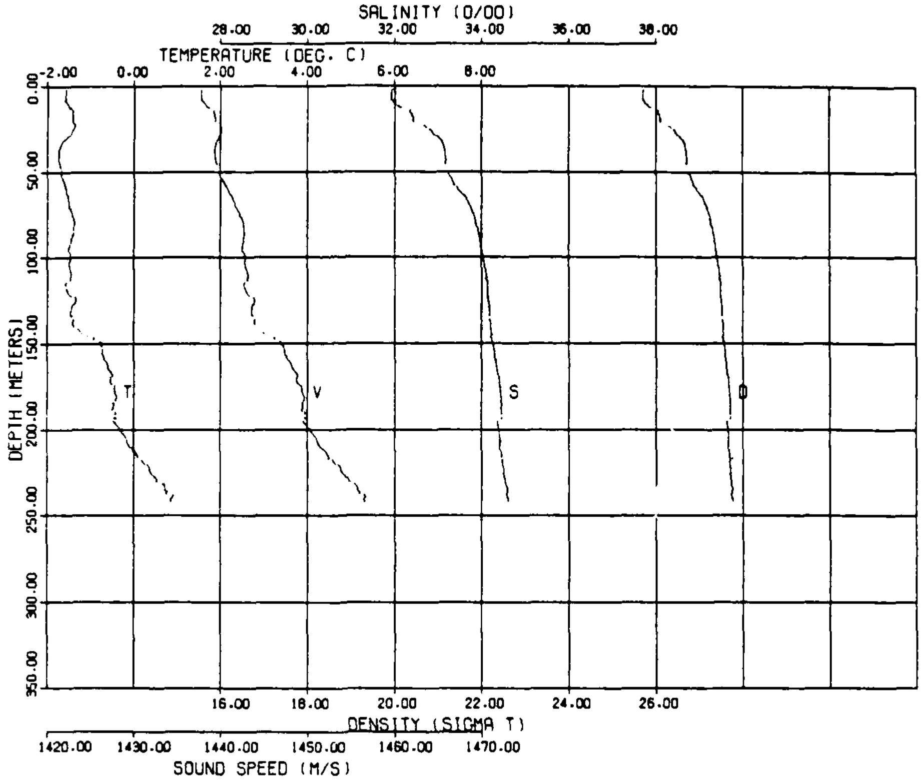
09/22/79 0325 STA 206 77-911N 8-386W BOTTOM 274



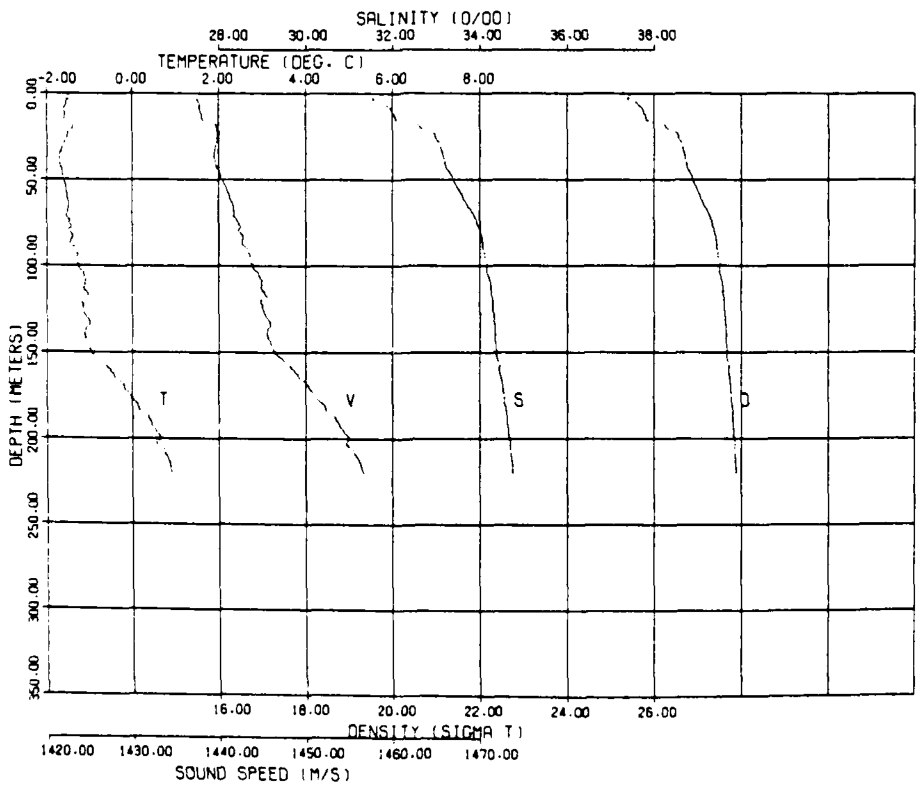

09/22/79 0525 STA 207 77-090N 8-405W BOTTOM 292
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/22/79 0715 STA 208 76-580N 8-433W BOTTOM 338
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

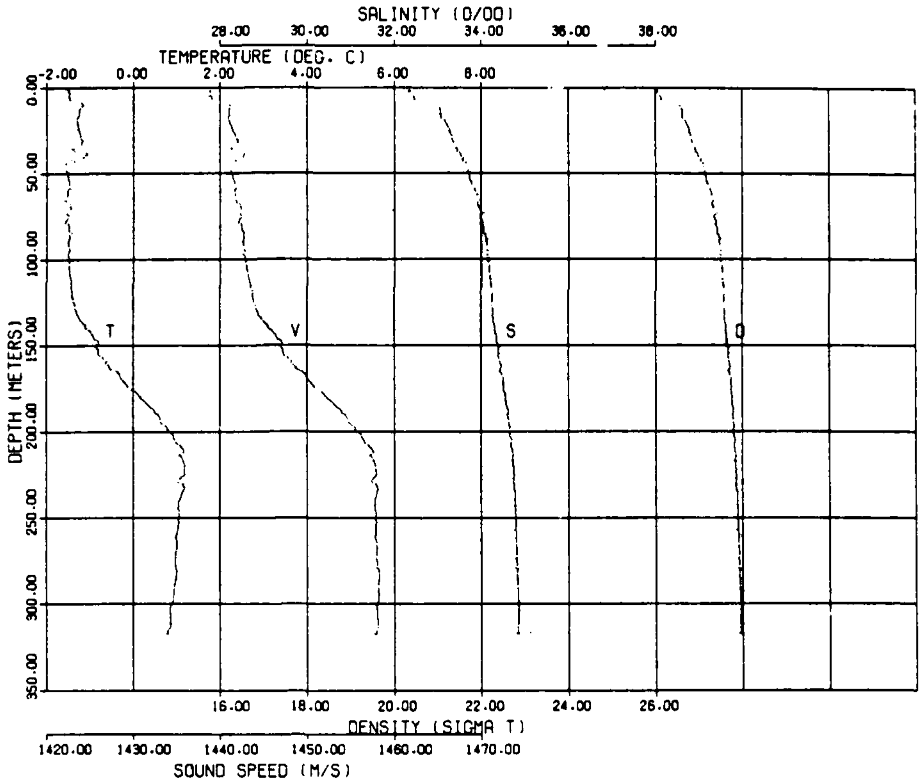
09/22/79 0935 STA 209 76-438N 8-454W BOTTOM 320



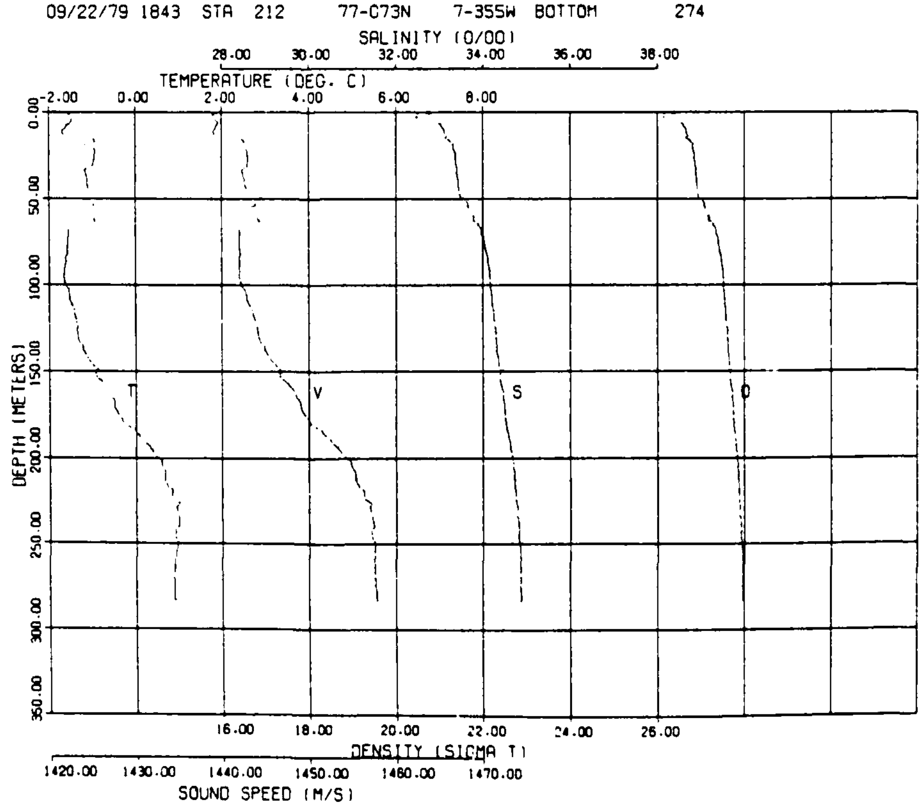
09/22/79 1433 STA 210 76-514N 8-915W BOTTOM 356



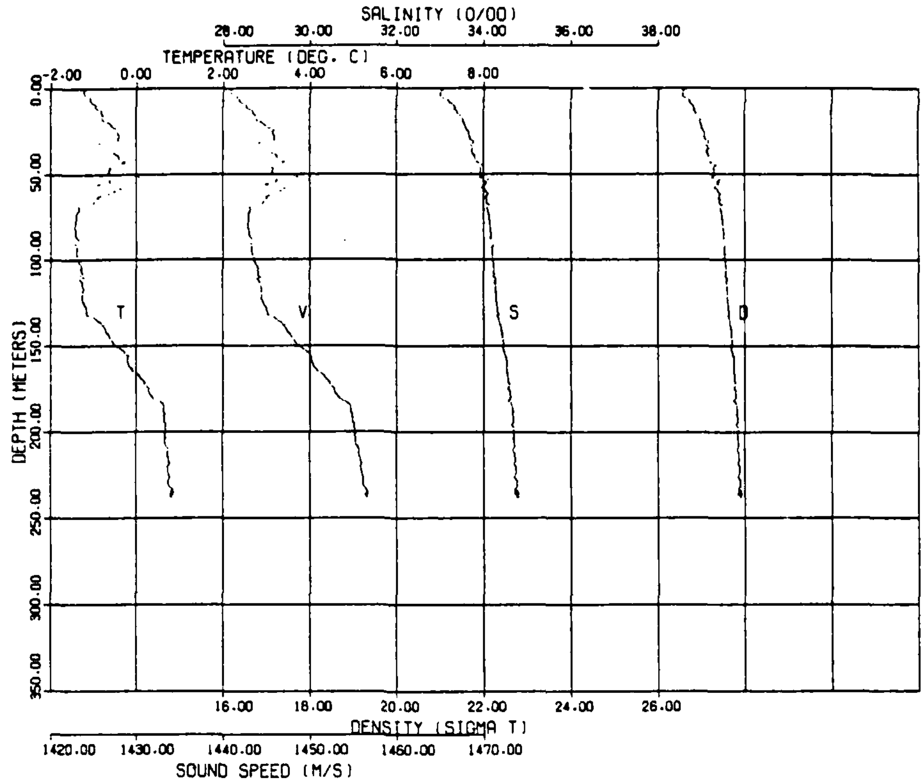
09/22/79 1702 STA 211 76-584N 7-561W BOTTOM 311



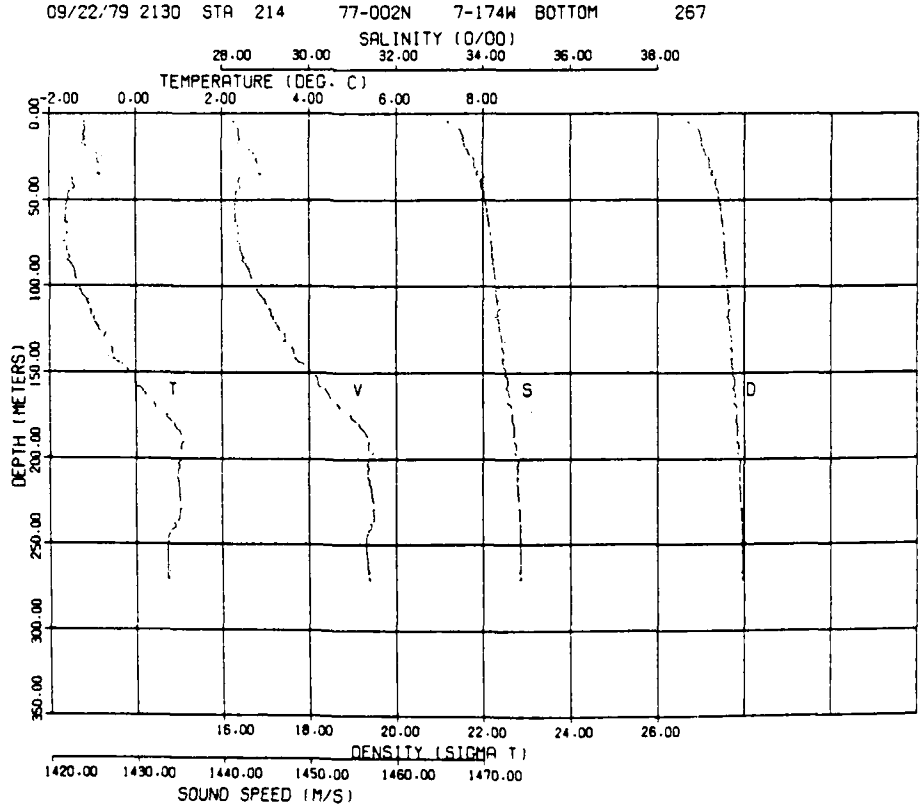
09/22/79 1843 STA 212 77-073N 7-355W BOTTOM 274



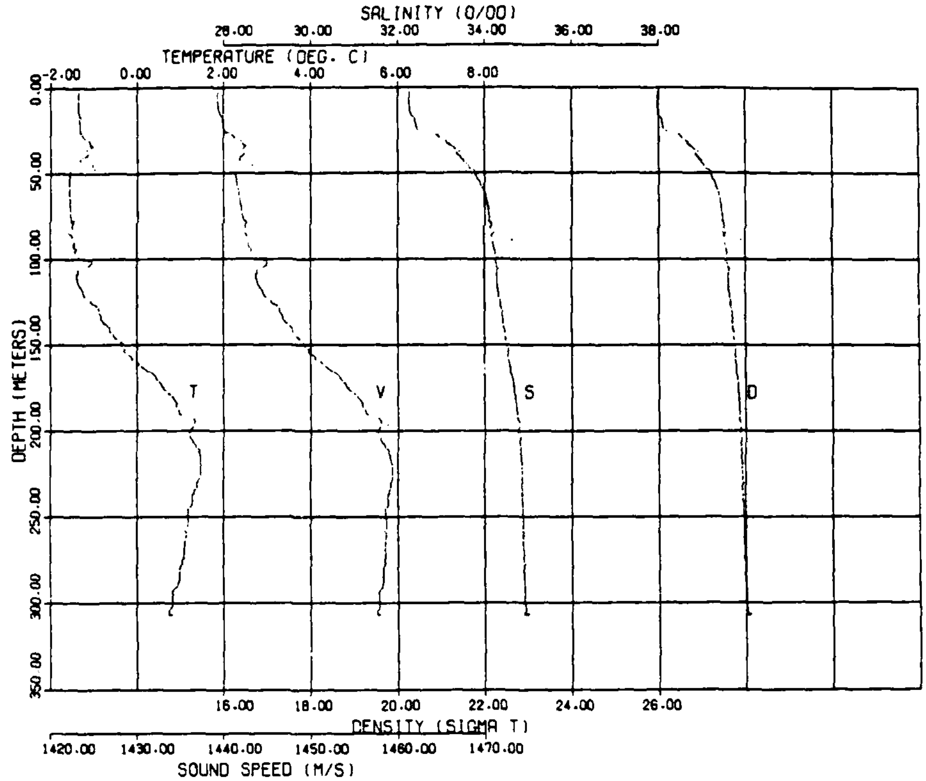
09/22/79 1946 STA 213 77-106N 7-187W BOTTOM 267



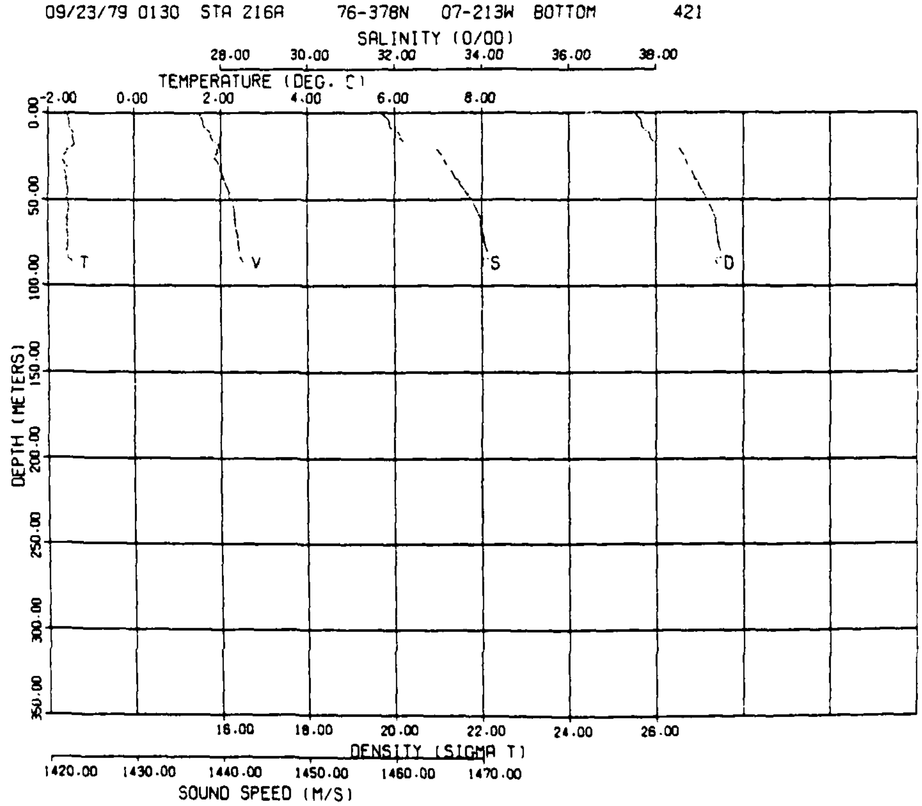
09/22/79 2130 STA 214 77-002N 7-174W BOTTOM 267

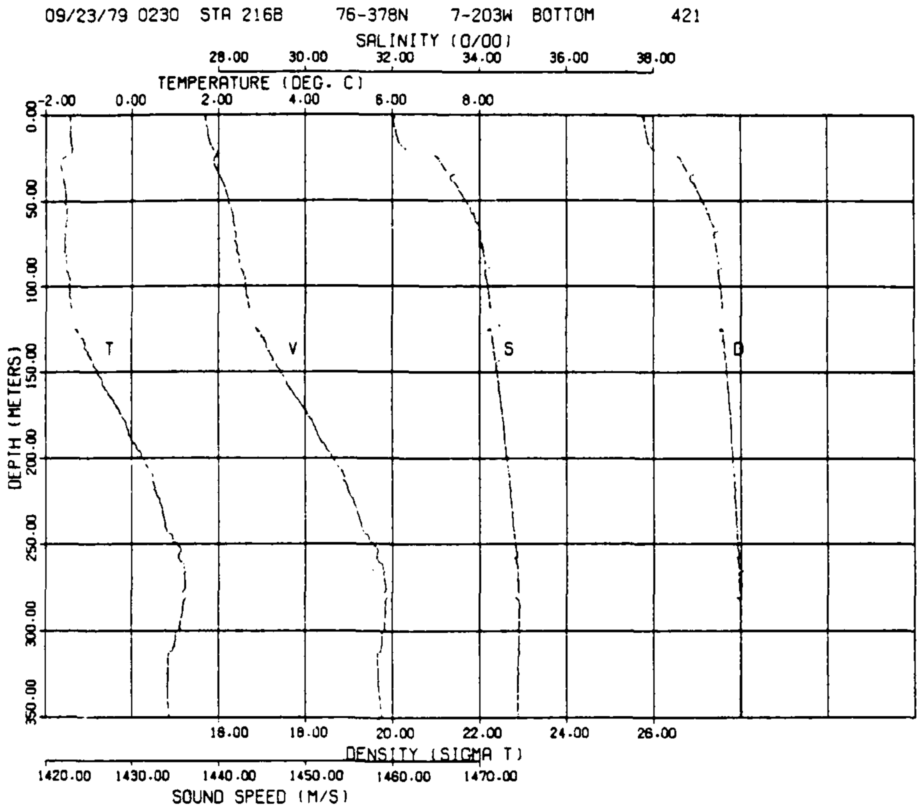


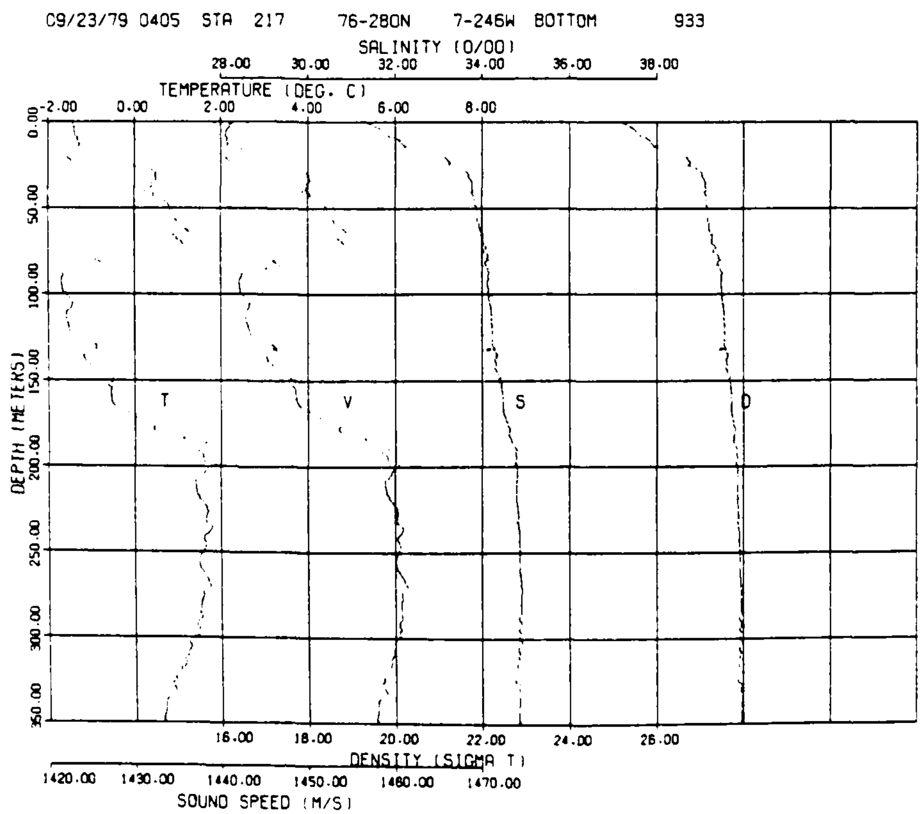
09/22/79 2320 STA 215 76-480N 7-190W BOTTOM 302



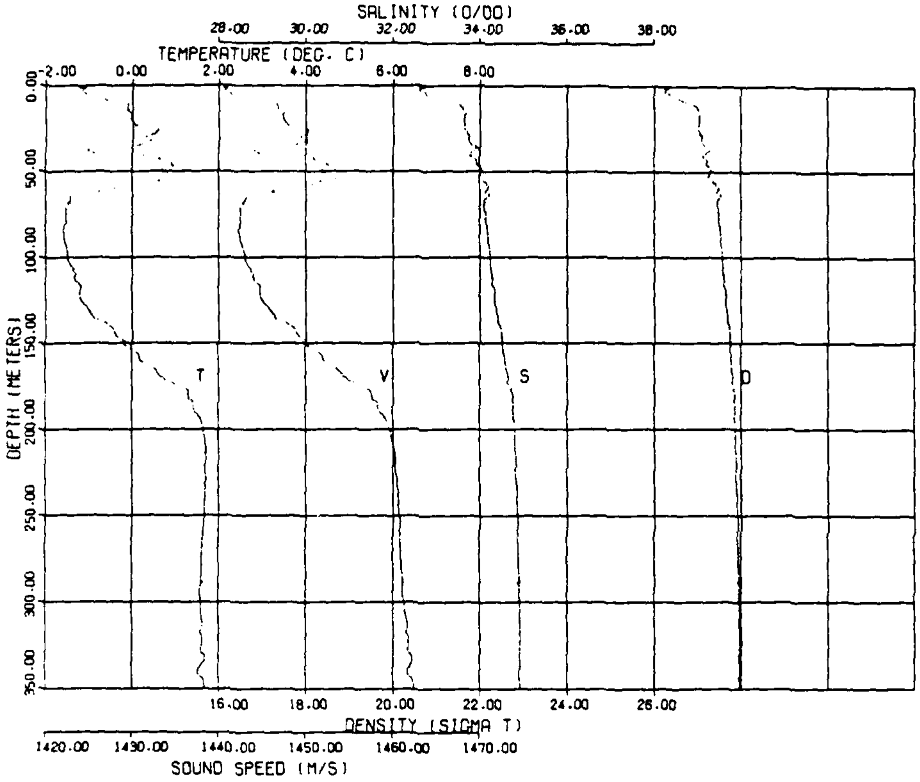
09/23/79 0130 STA 216A 76-378N 07-213W BOTTOM 421



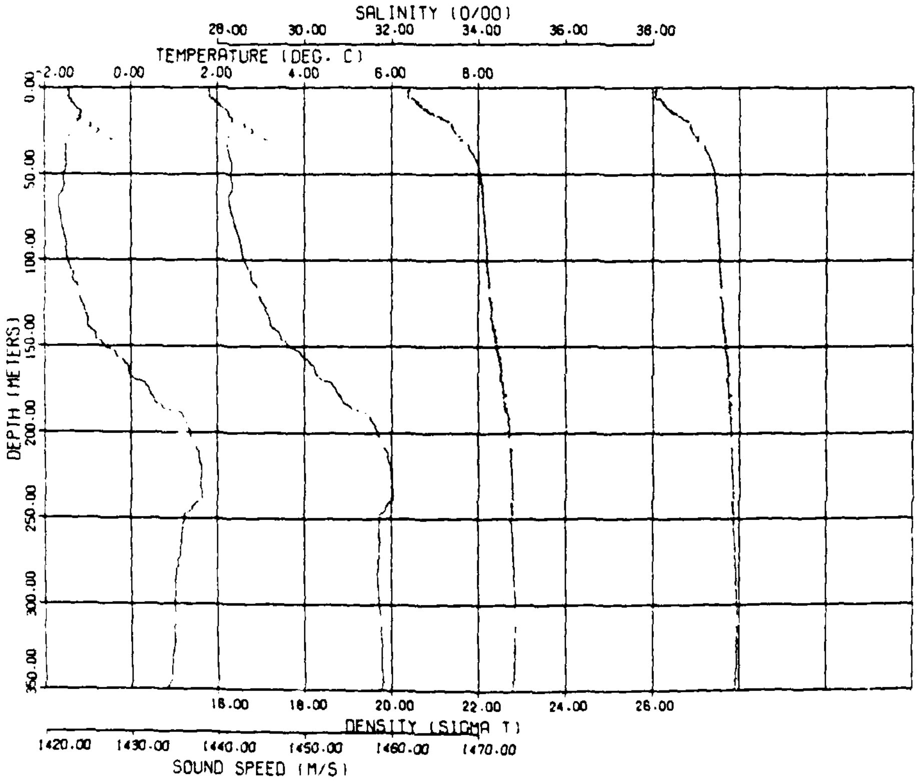

09/23/79 0230 STA 216B 76-378N 7-203W BOTTOM 421
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/23/79 0405 STA 217 76-280N 7-246W BOTTOM 933
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

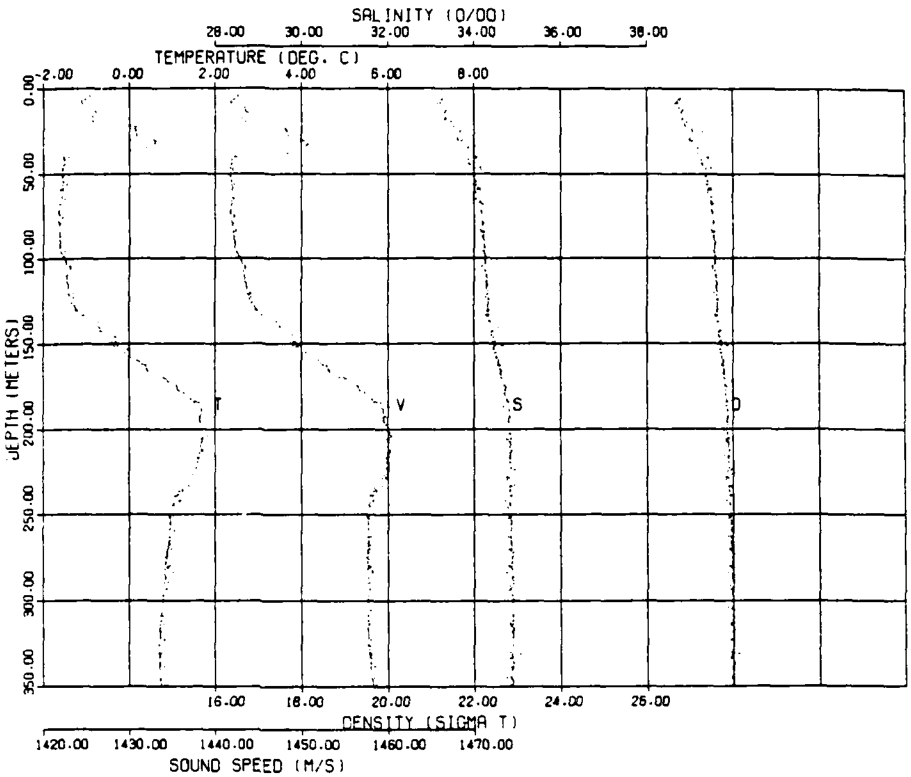
09/23/79 0600 STA 218 76-371N 7-020W BOTTOM 914



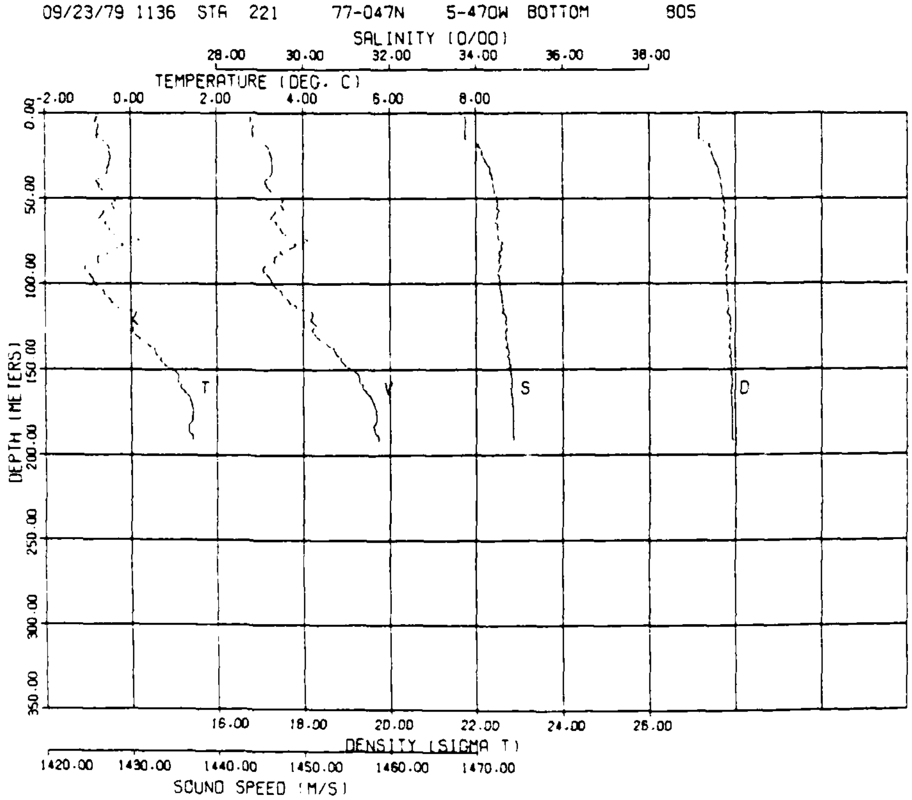
09/23/79 0720 STA 219 76-453N 6-432W BOTTOM 768

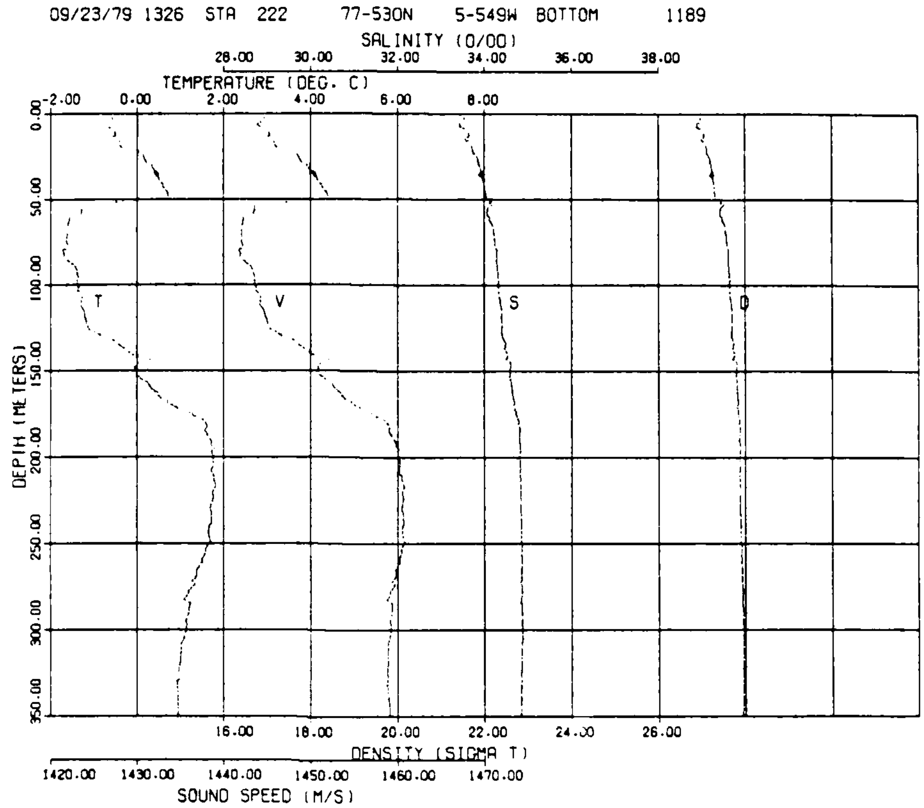


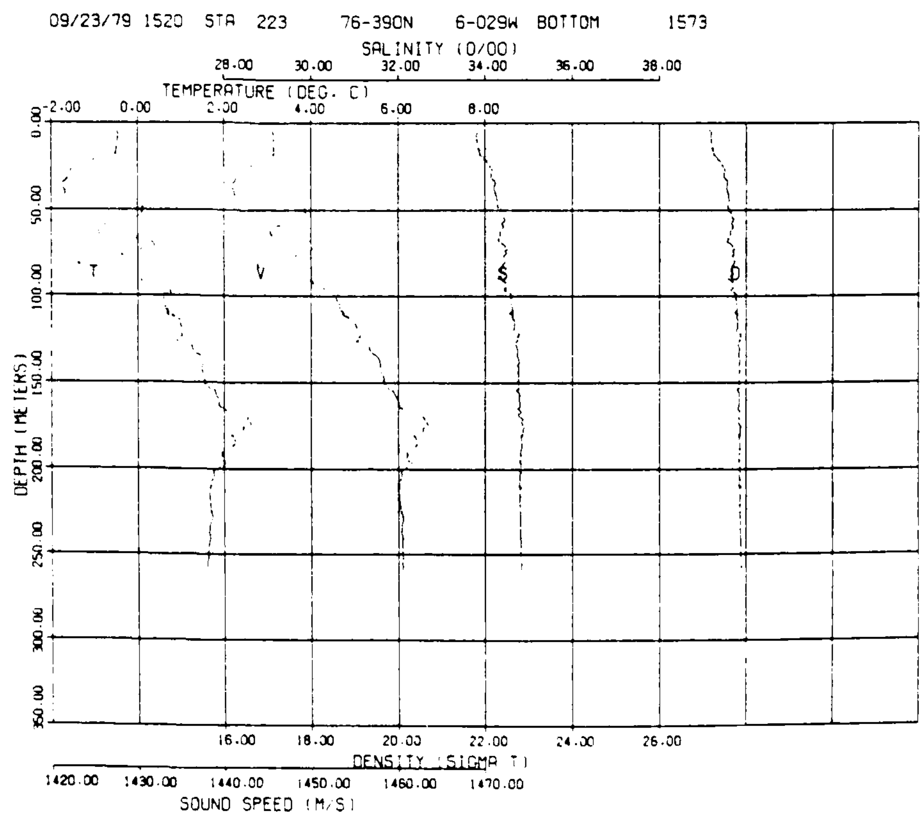
09/23/79 0900 STA 220 76-550N 6-109W BOTTOM 859

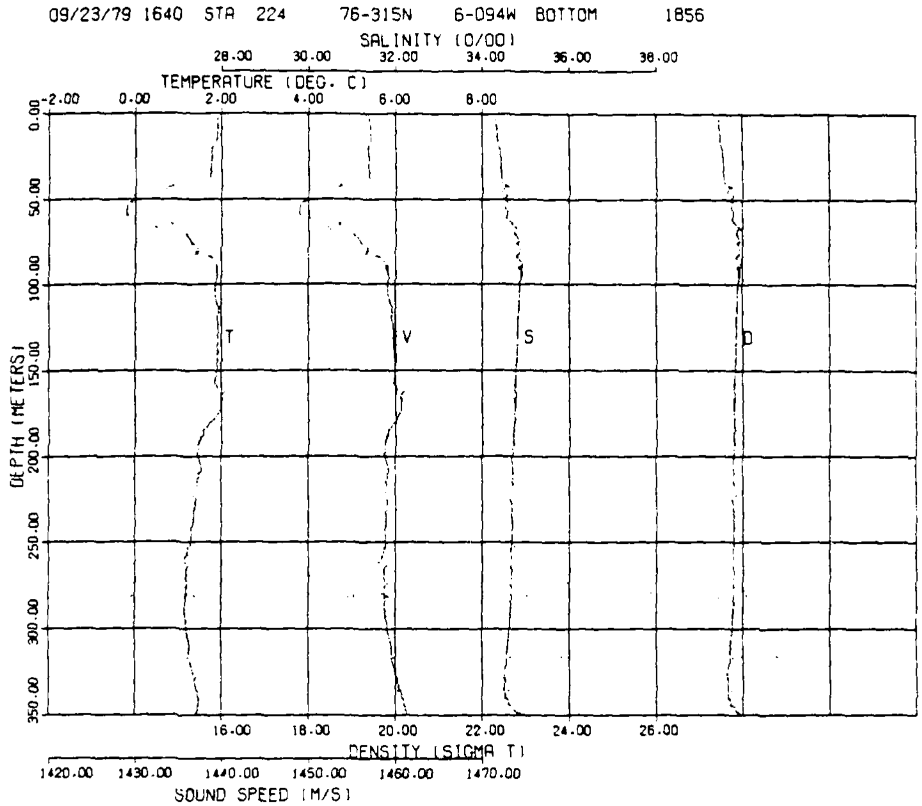


09/23/79 1136 STA 221 77-047N 5-470W BOTTOM 805

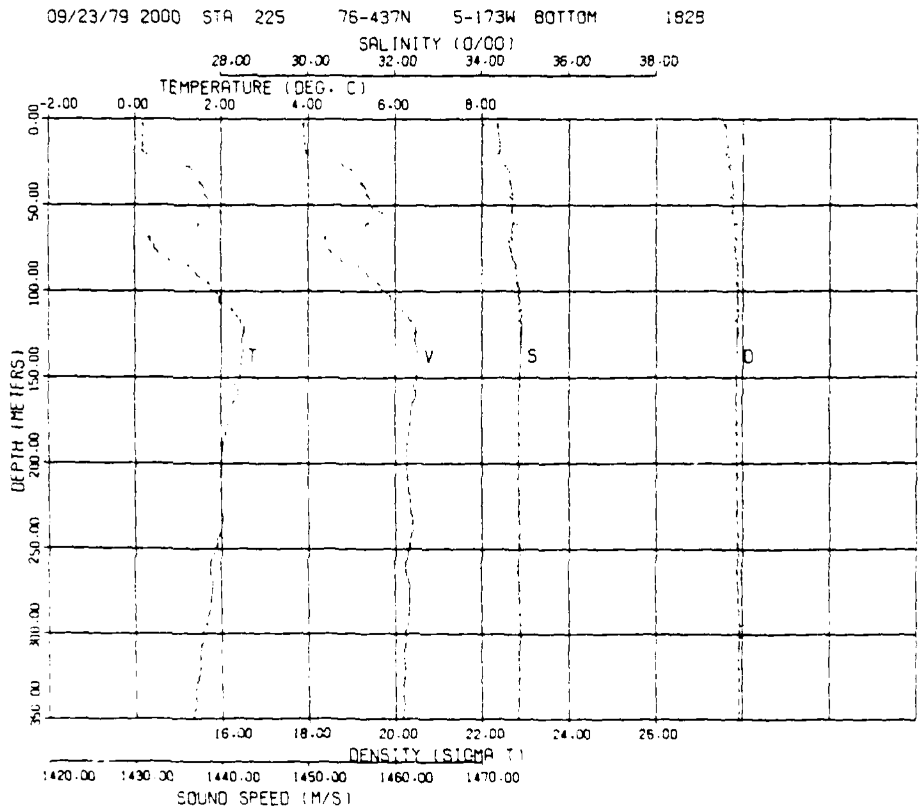



09/23/79 1326 STA 222 77-530N 5-549W BOTTOM 1189
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

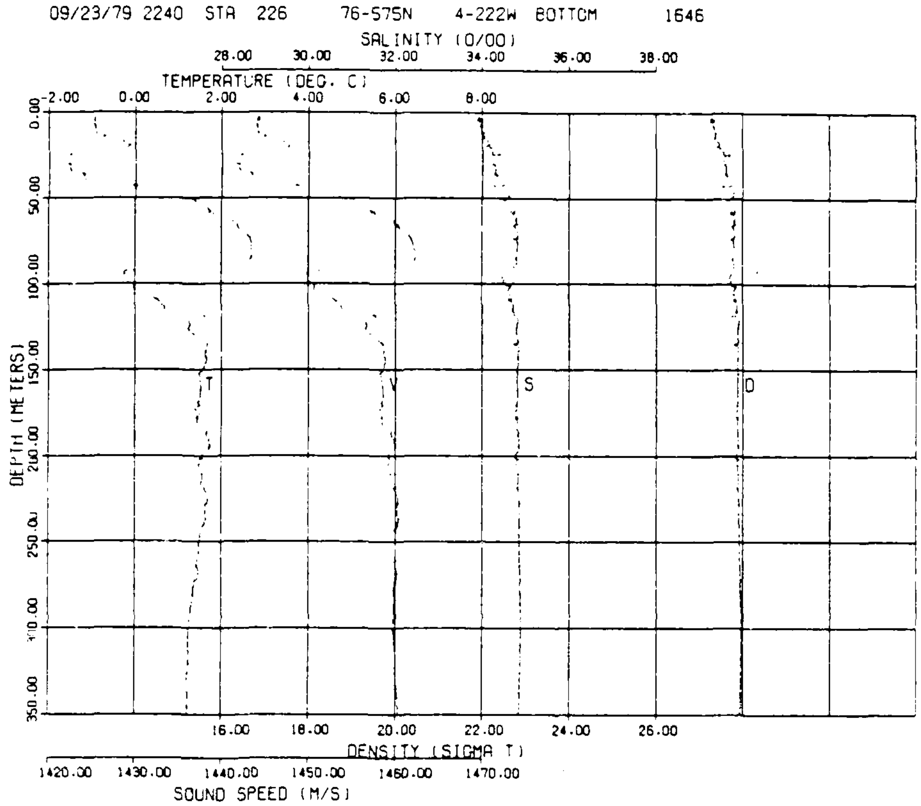

09/23/79 1520 STA 223 76-390N 6-029W BOTTOM 1573
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

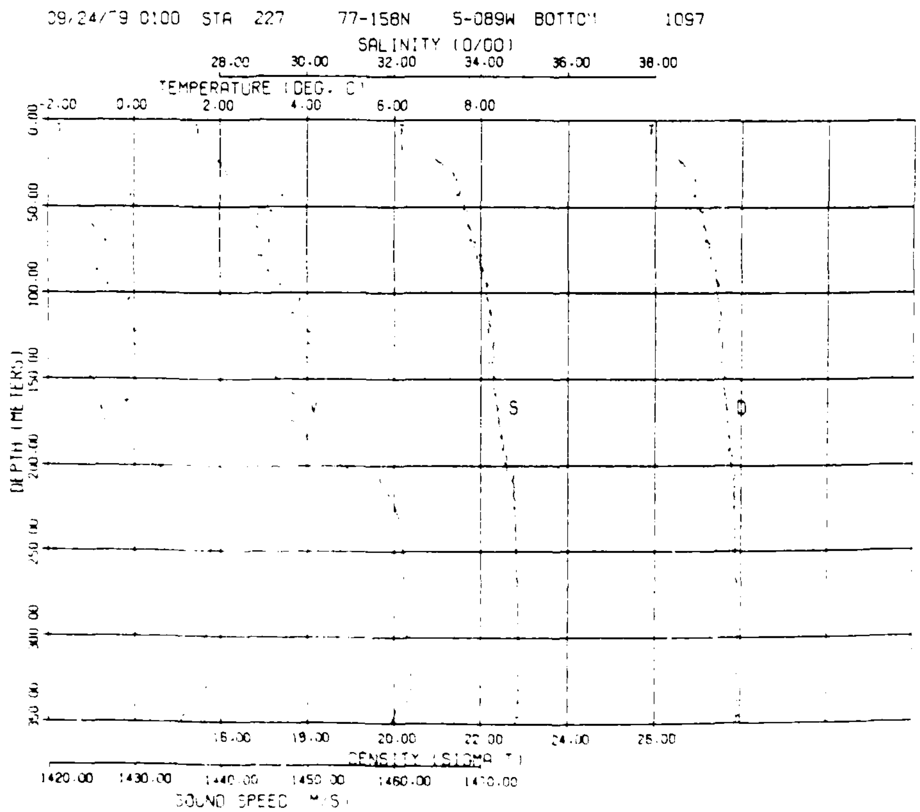


09/23/79 1640 STA 224 76-315N 6-094W BOTTOM 1856
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)



09/23/79 2000 STA 225 76-437N 5-173W BOTTOM 1828
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T V S D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/23/79 2240 STA 226 76-575N 4-222W BOTTOM 1646
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/24/79 0100 STA 227 77-158N 5-089W BOTTOM 1097
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

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OCEANOGRAPHIC DATA FROM NORTHWEST GREENLAND SEA: ARCTIC EAST 19--ETC(U)
1981 J L NEWTON, L E PIPER N00014-79-C-0689
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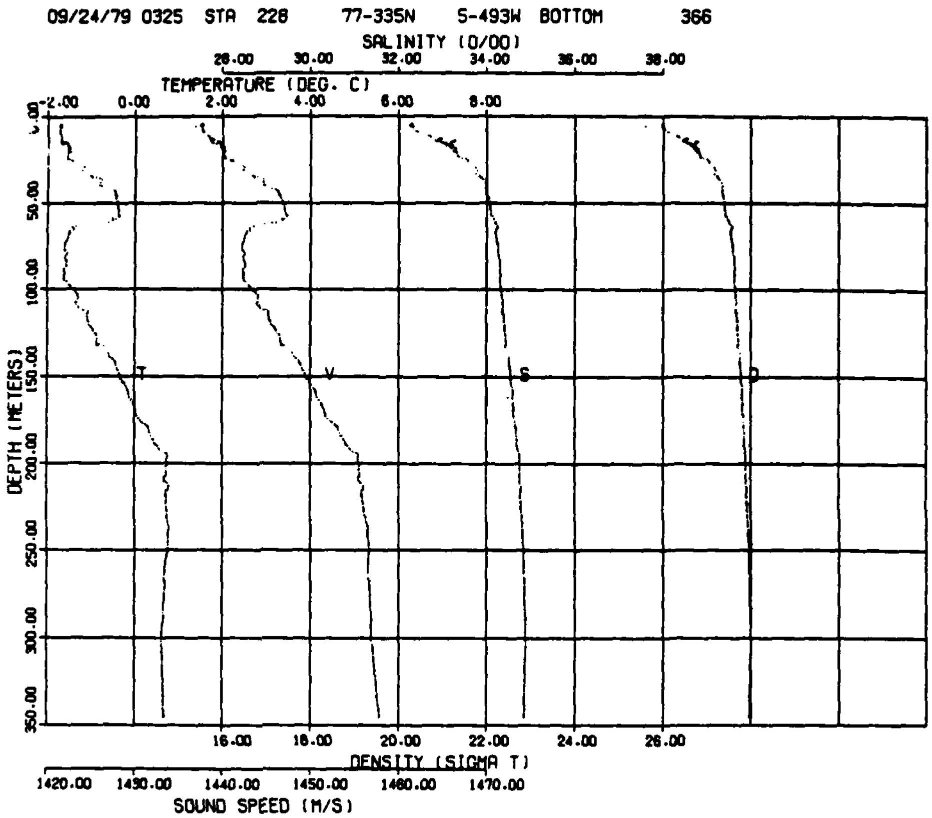
09/24/79 0325 STA 228 77-335N 5-493W BOTTOM 366
SALINITY (0/00)
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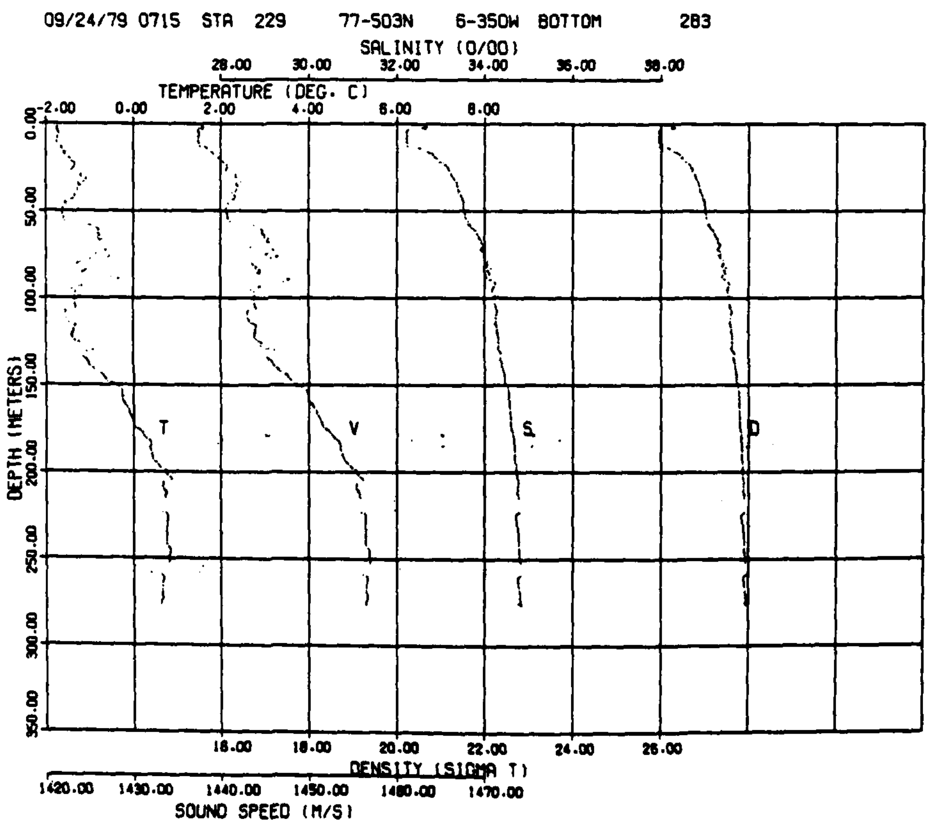
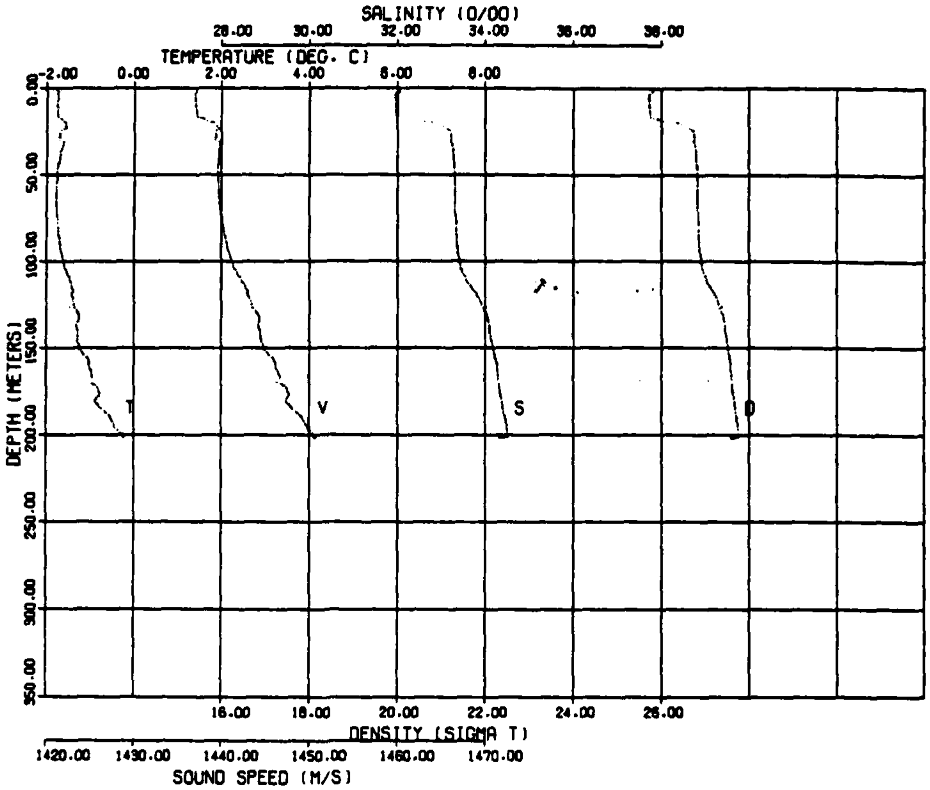
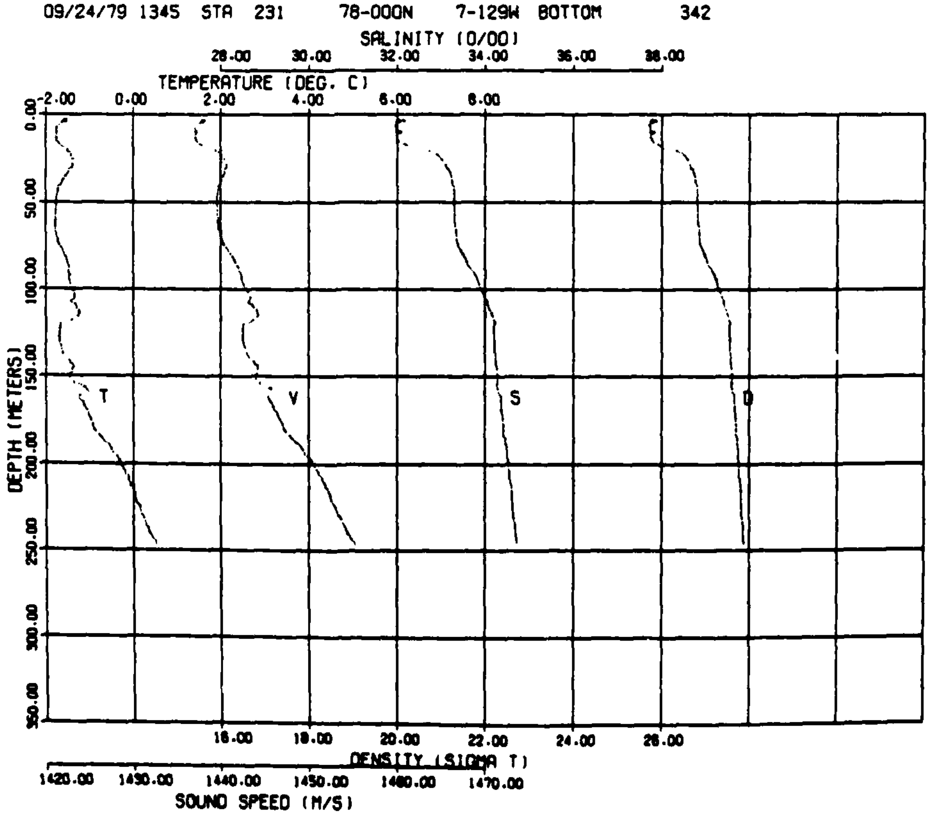
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)


09/24/79 0715 STA 229 77-503N 6-350W BOTTOM 283
SALINITY (0/00)
28.00 30.00 32.00 34.00 36.00 38.00
TEMPERATURE (DEG. C)
-2.00 0.00 2.00 4.00 6.00 8.00
DEPTH (METERS)
0.00 50.00 100.00 150.00 200.00 250.00 300.00 350.00
T
V
S
D
16.00 18.00 20.00 22.00 24.00 26.00
DENSITY (SIGMA T)
1420.00 1430.00 1440.00 1450.00 1460.00 1470.00
SOUND SPEED (M/S)

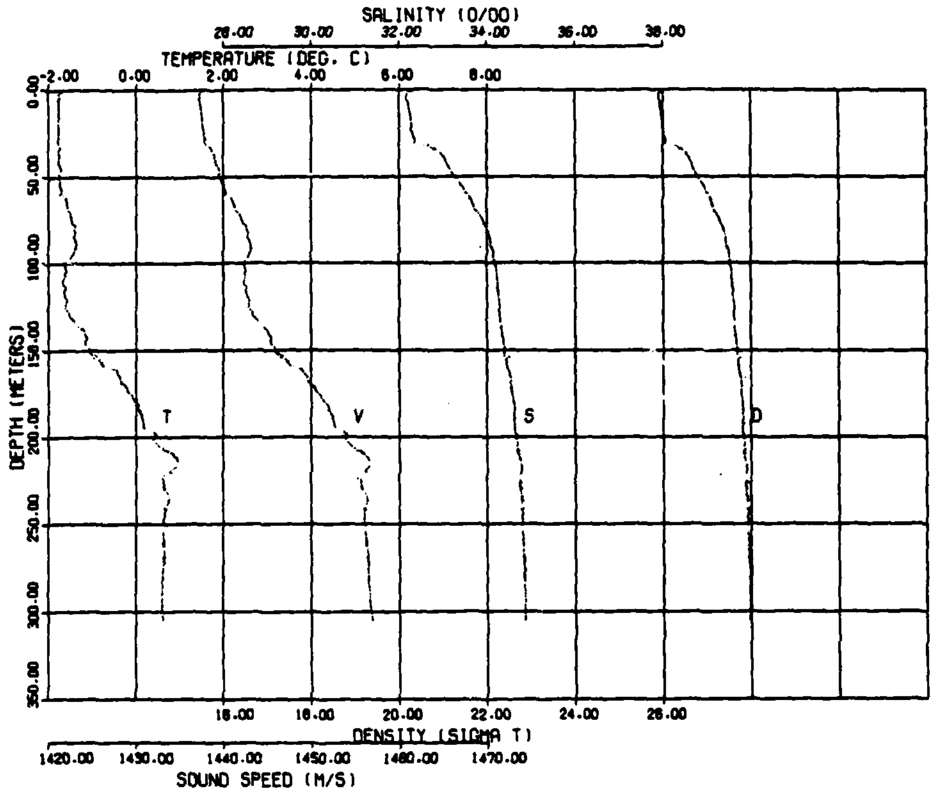
09/24/79 1055 STA 230 77-598N 7-566W BOTTOM 210



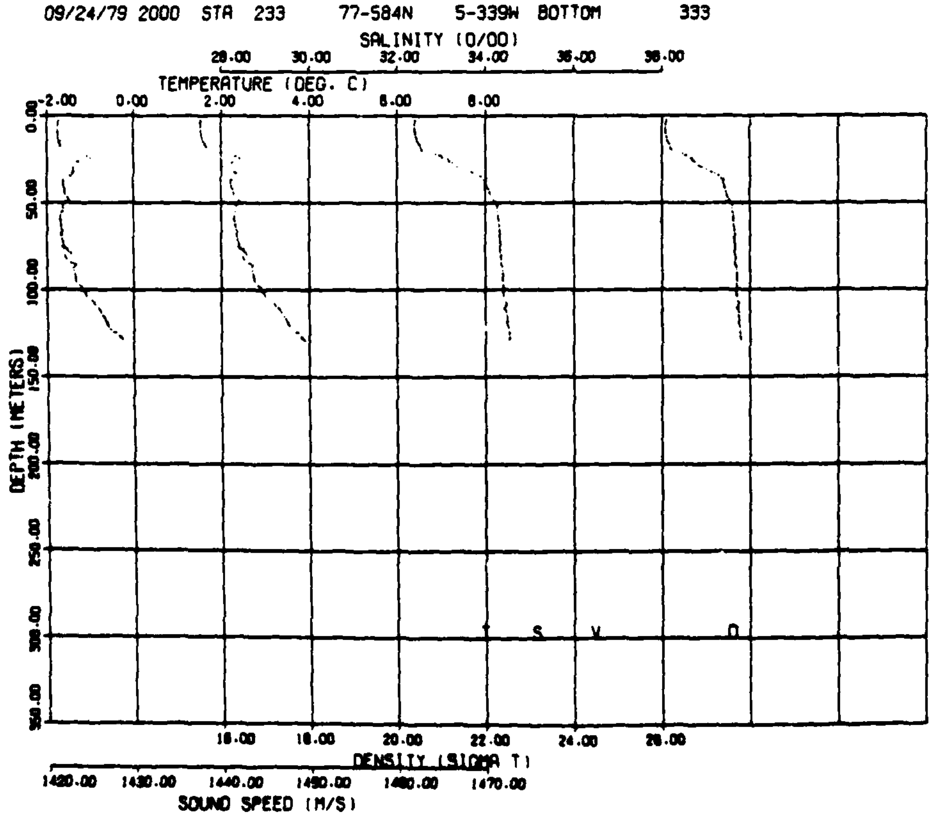
09/24/79 1345 STA 231 78-000N 7-129W BOTTOM 342



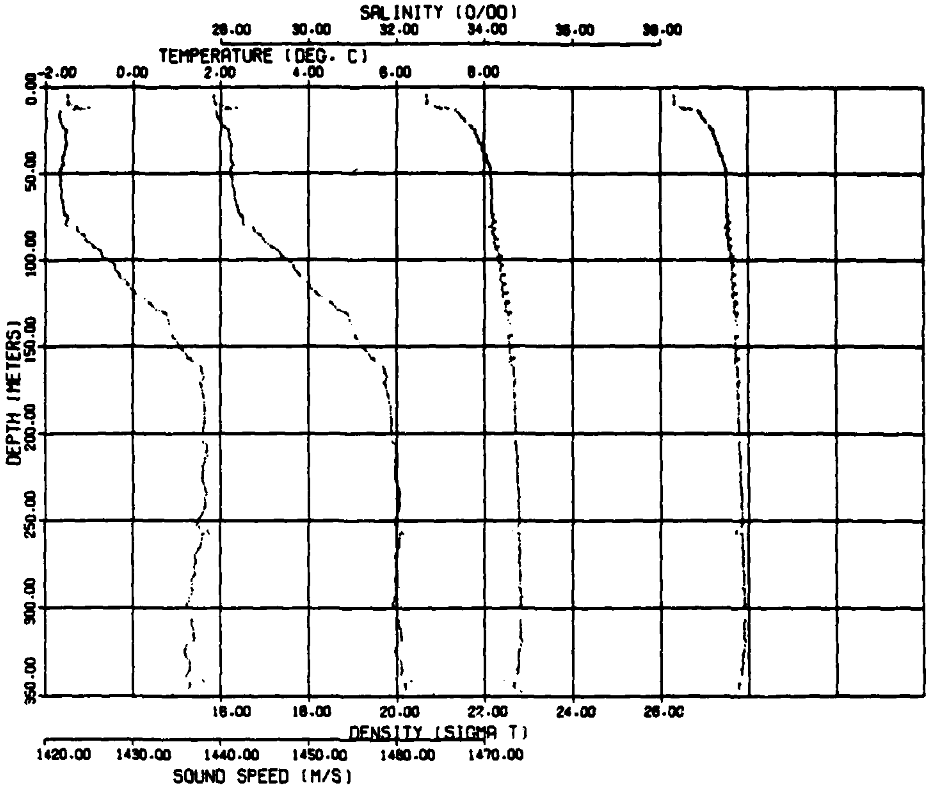
09/24/79 1705 STA 232 78-000N 6-109W BOTTOM 302



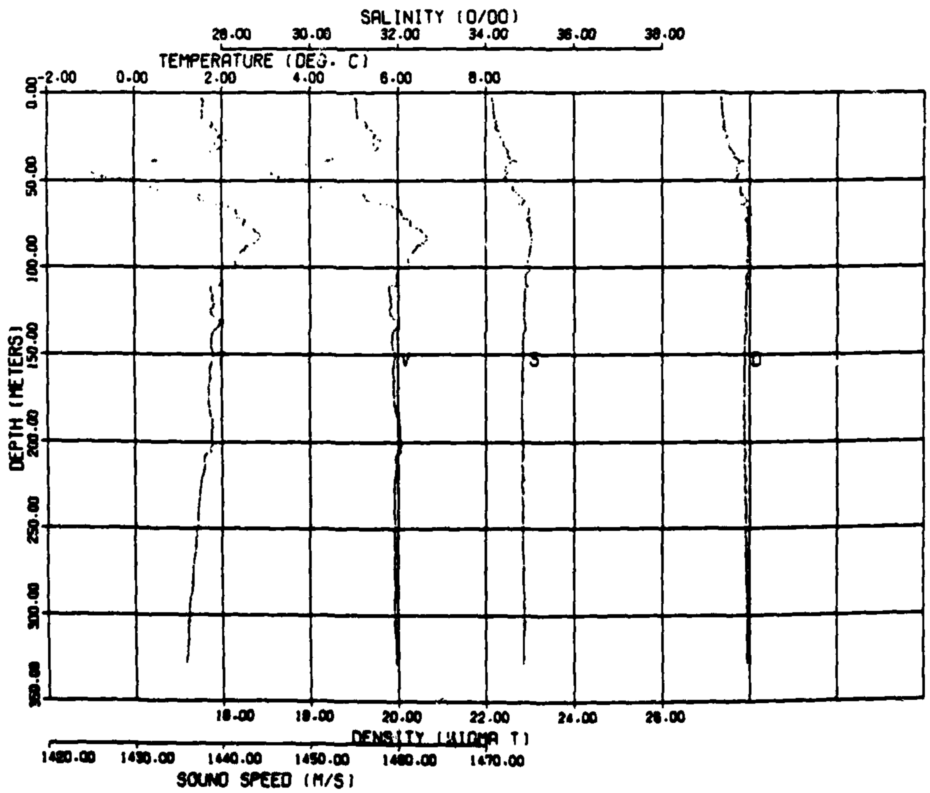
09/24/79 2000 STA 233 77-584N 5-339W BOTTOM 333



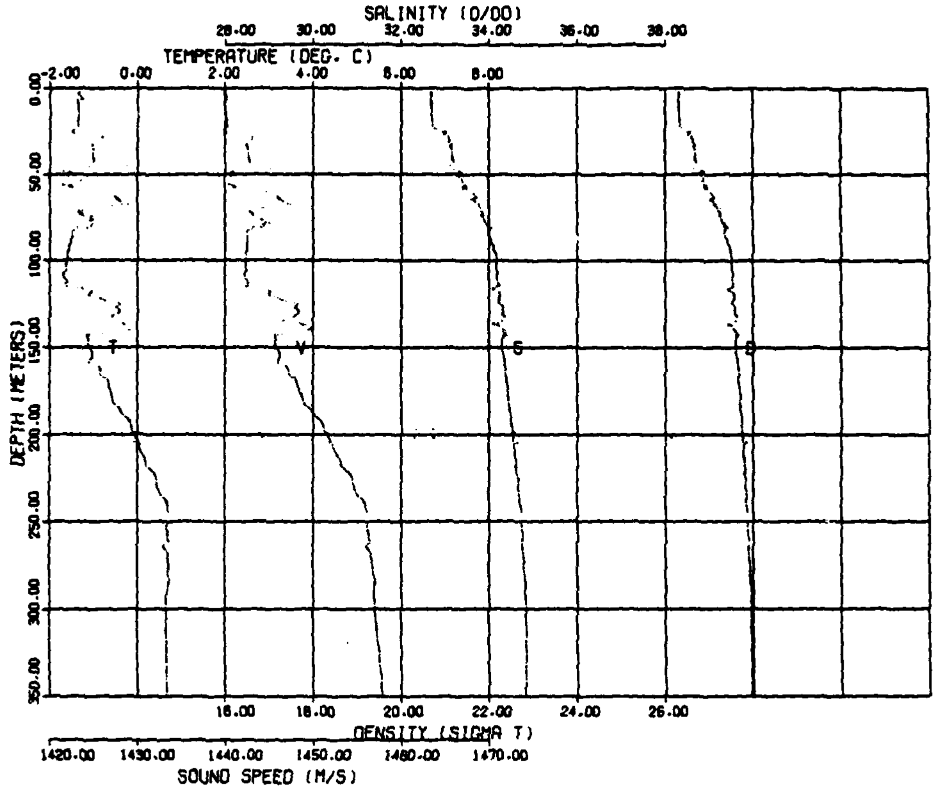
09/24/79 2130 STA 234 77-595N 4-470W BOTTOM 1646



09/24/79 2325 STA 235 78-003N 4-019W BOTTOM 2523



09/25/79 0625 STA 236 77-231N 5-350W BOTTOM 640



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